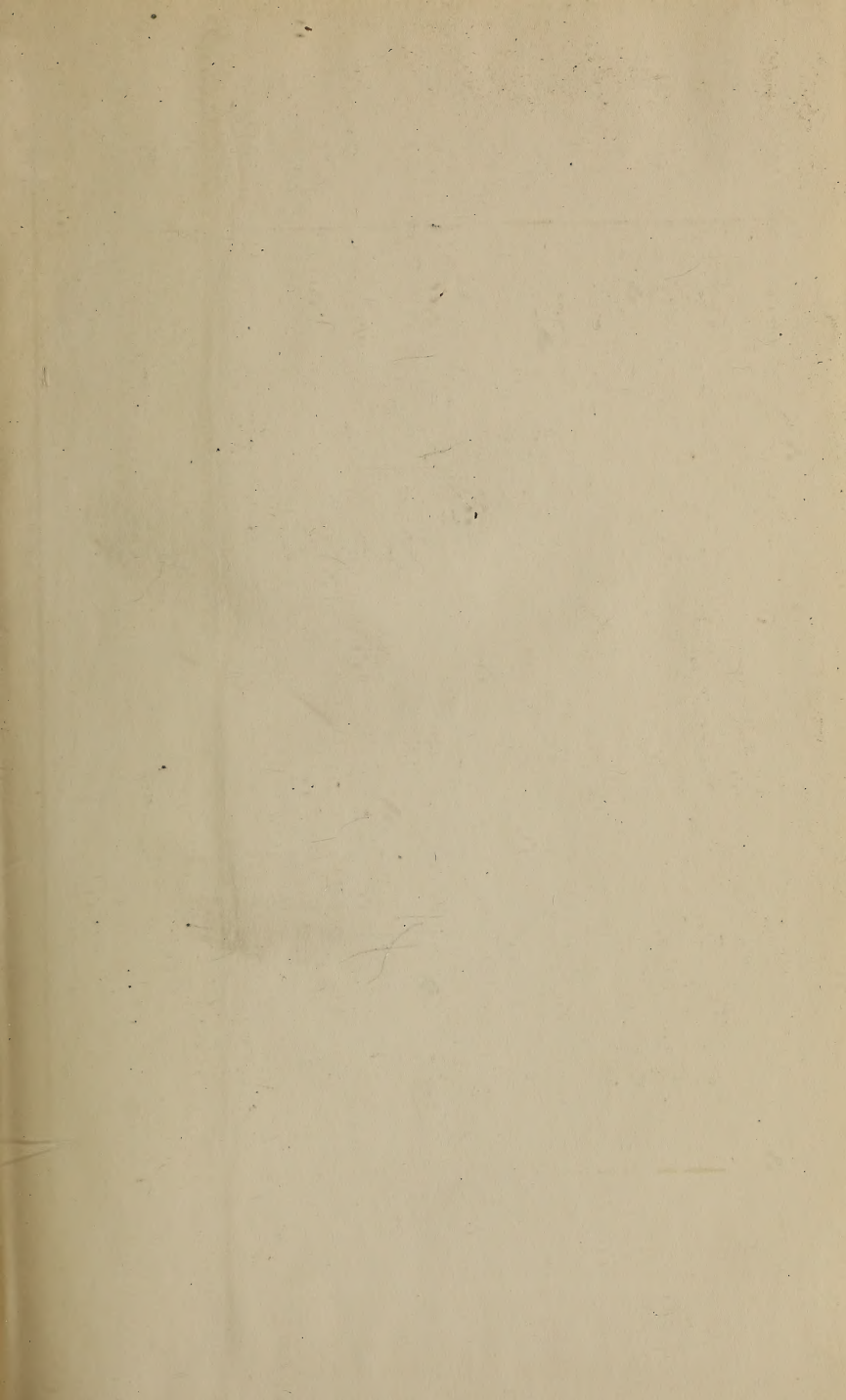




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THE
BRITISH JOURNAL
OF
DENTAL SCIENCE.

VOL. XXVIII.
JANUARY—DECEMBER, 1885.

LONDON:
322 & 324 REGENT STREET, W.

BRITISH JOURNAL
OF
DENTAL SCIENCE

LONDON :

J. P. SEGG & CO., STEAM PRINTING WORKS,
23. BOUVERIE STREET, FLEET STREET, E.C.

British Journal of Dental Science.

No. 407. LONDON, JANUARY 1, 1885. VOL. XXVIII.

ON REFLEX UTERINE—DENTAL ACTION, FALL OF TEETH IN GESTATION AND IN THE CESSATION OF MENSTRUATION.

By Chevalier Dr. CACCIAGUERRA of Catania.

This third case of reflex action from a physiological cause, forms the sequence of two former reports in this Journal. (1.) The first of these has been reproduced in some American dental journals. This has encouraged me to continue these studies; one thing, however, must be remarked, that in these reproductions the name of the author has been withheld; I believe that on the other side of the Atlantic they cannot be ignorant of the sacrifices required by scientific work, and of which the only recompense is publicity.

My studies in this case are not without interest in a specially surgical point of view, giving as they do greater confirmation of the principle of physiological uterine and dental correspondence, as also the reflex pathological effects upon the teeth and their organism; I believe that by means of a practical knowledge of these studies in women, one might be able to throw a new light upon the preservation of the masticating apparatus.

The Signora A. B.—æt 19 years of age entered for the first time in the period of pregnancy, and at the same time was assailed by pain in the fifth year right inferior molar, without any appreciable organic lesion being found, either in the tooth, the alveolar process, or in the region of the jaw; the pain varied so much in kind that it was believed to be neuralgia of the trigeminus. In course of time pregnancy showed itself, then referring to the date of the pain, and looking at the symptomology which accompanied the paroxysms in a different aspect, the diagnosis was formed that the pain was a reflex physiological symptom of gestation, and so the physician scientifically began to follow a rational cure, suitable to the state of the patient, lessening the pain where possible, and the hysterical spasmodic symptom. Meantime the tooth which was the cause of the pain, showed

in the second month of pregnancy a weakness to the touch, a symptom of irritative alteration of the alveolar process daily becoming more acute, until at the beginning of the 4th month it increased so much as to become moveable, and in the first fifteen days of the 8th month the fall of the tooth was occasioned by a simple movement of the tongue during mastication, so that the pain of which it was a symptom, ceased. Two years after the lady again became pregnant, and immediately pain began in the 5th year first large left lower molar, manifesting the same symptoms and the same spasms as during the preceding gestation; these were treated according to the various phases of pain and symptoms, but were rebellious to the curative treatment, and clearly showed the origin of the pain to depend on some exciting cause which resulted in a pathological reflex affection, the effect of an always increasing physiological and periodical function, until reaching the first fifteen days of the 8th month, and therefore at the same date as in the former gestation, the tooth fell out by itself during mastication. Five other pregnancies followed in the same manner, in the course of which the lady lost four of the five year molars, and the right lower wisdom tooth.

The sixth pregnancy began as the others, the pain this time attacked the left lower wisdom tooth in the same way, and with the same symptoms as the preceding. The medical man as well as the family desired to have a consultation of which the result was as follows. As the tooth once attacked never gave any rest from pain until it terminated by the fall of the tooth, and as the lady had now reached the fifth month of pregnancy without (as in the preceding cases) having found any relief from therapeutic treatment, they wished to try whether with the extraction of the tooth the pain would cease.

The extraction was performed, and for twelve days there was a complete calm, though at the end of this time the pain commenced in the left upper molar but in a more acute form, with the same attacks and the same phenomena, and instead of the eighth month, the tooth fell a few days before the confinement, precisely in the transitory stage from pregnancy to the puerperal state.

From the 7th gestation onward the same reflex symptoms showing themselves, the same curative system as first indicated was adopted, that is to say, the cure of the symptoms following the phases which presented the same periods, the same kind of phenomena to the 8th month in which the tooth affected always fell out.

At the tenth and last pregnancy the reflex physiological symptoms ceased, the number of children amounted to ten, six sons and four daughters, of which number only five survived, the number of teeth lost were eleven large molars, the only molar remaining being the upper left wisdom tooth. At this time the lady finished her 37th year. After the puerperal state, followed the nursing, to this the menstruation, when the organism returned to its normal state.

Without those alternations of period and quantity which are properly the symptoms of cessation of the menstruation in the woman, Signora B——ceased to menstruate in her 42nd year ; some time passed, how long the patient could not specify, she began to be aware of looseness and pain in the teeth, which being left without any especial cure, soon became useless for the purpose of mastication ; it is, however, worthy of note that the wisdom tooth, remnant of the gestations remained free of this new disease. Two years were passed with a gradual and continued deterioration of the patient's state.

At this period I was first consulted. From the narration of the medical man who had attended the lady, from her, her family, and from questions I asked, I learnt the interesting incident which I have just related I then proceeded to examine the maxillary arch, where I found a suppurative alveolar periostitis gingivitis, and for this reason there was destruction of tissue and a rising of the alveolar base which were the cause of an extreme mobility, the gums swollen, highly vascular, insensible to the touch, bleeding easily, the teeth laden with a calcareous deposit which aided their fall. Up to the present time, she had lost seven in this manner ; altogether there was a general decomposition of the maxillary arch, almost of a scorbutic nature. From the differential diagnosis it was shown to have been a reflex action of the definitive closing of the womb, and not having the least hope of saving any of the teeth, I proposed the extirpation of the remaining thirteen. The operation lasted two hours, for in some of the extractions the hæmorrhage was very pronounced and had to be stopped before passing to another. I took the precaution of operating in the other jaw and on the opposite side of the first, so alternating I had no reason to fear any consecutive symptom, owing to the vascularity of the gums. I ordered a concentrated solution of perchloride of iron to be applied three times a day with a camel hair brush, in order to stimulate a consistent alveolar obliteration.

On again seeing the patient five days later, I observed that the alveolar edges had begun to diminish, but the vascularity

which produced the swelling gave no sign of absorption. I was therefore obliged to practice both cutting away and cauterisation of the gum, then by the use of local and general tonic treatment they were healed in sixteen days, the maxillary edges becoming so firm as to be able to support a set of artificial teeth which, re-established the functions of the mouth.

The resumé of this account shows two periostitial affections caused by reflex action on the two different permanent dentitions, from the effect of the two principal physiological functions of the uterus, which are generation and menstruation. The first showed itself with a symptomatic reflex pain caused by gestation which attacked only the large molars, and one knows well that these are not replaced and do not replace others, but form a single dentition which begins with the five year old teeth and terminate with the wisdom teeth, being called the third dentition. In this case the reflex action repeated eleven times was clear, marked, and produced the destruction of eleven large molars. The second was also a physiological reflex action which showed itself in consequence of the cessation of the menstrual discharge. This malady according to the differential diagnosis, began at first with a gingival swelling to which followed a simple periostitis in the teeth of replacement, which increasing reached the alveolar process and destroyed its small bones, causing an irreparable looseness and disorganisation of the dental arches.

In the destruction which followed to the permanent teeth, the wisdom tooth remained in its post as if foreign to what was happening around it.

The diagnosis and therapeutics of the cure of reflex symptoms in the gestation was most exact, but this subject would merit a more special and profound study on the manifestation of the increasing phases in order to obtain more insight in the influence of the uterus over the teeth.

In the second reflex affection the loss of the teeth was due to the insensibility which caused neglect to the first symptoms, for had the disease been attacked in its first stage a cure could have been attained by a local, general, and rational treatment.

A WARNING.—An important caution is given by the *Southern Dental Journal*, it says, "There were several cases of dam poisoning reported before the Odontological Society of Pennsylvania. Rubber dam should never be used unless washed with soap; and to perfume it before using is agreeable to patients."

COMPARATIVE DENTAL PATHOLOGY.*

By J. BLAND SUTTON, F.R.C.S., Eng.

Lecturer on Comparative Anatomy, and Senior Demonstrator of
Middlesex Hospital Medical College.

This paper is intended to support certain opinions set forth in a communication made to this Society about a year ago; also to supplement some of the examples of disease there recorded, and to give other details concerning a few of the cases mentioned therein.

Last February, Professor Owen reminded me in a letter that there is evidence of disease of the teeth among extinct animals, and at the same time kindly gave me the reference to the following case, which is described in his "History of British Fossil Mammalia," p. 388:—"The tooth was a fossil molar of a large-sized horse, *Equus fossilis*, from the tertiary formations near Cromer. The grinding surface measured one inch and five lines antero-posteriorly, and eight lines from side to side. The tooth was from the lower jaw, and presented a swelling near the base of the implanted part. To ascertain the cause of this enlargement a transverse section was made, when a spherical cavity was exposed large enough to contain a pistol-ball. The inner surface was smooth; the parietes of this cavity, composed of dentine and enamel of the natural structure, were from one to two lines and a half thick, and were entire and imperforate. The water percolating the stratum in which this tooth had lain and found access to the cavity through the porous texture of its walls, and had deposited on its interior a thin ferruginous crust, but the cavity had evidently been the result of some inflammatory and ulcerative process in the original formative pulp of the tooth."

The above instance of primeval disease is in no small degree interesting, and there are many recorded examples of disease in the bony structure of animals now extinct. It is not improbable that if observations on disease of teeth be carefully investigated on a widely extended basis, the notion that "dental caries" is a result of high civilisation will require some amendment.

Before entering into the description of new instances of the dental tissues in wild animals, further particulars must be given concerning two or three of the cases which were detailed in the Transactions of this Society last session. (January, 1884).

Under the heading of "Abnormality of Direction," an

* A Paper read before the Odontological Society of Great Britain,

example of aberration was given from a babirussa. The curiously curved canine teeth becoming altered in their course, had commenced to make their way into the animal's skull, but the ends were cut to prevent this untoward occurrence.

Some months after this operation the animal died, and an opportunity was thus afforded of examining the sockets of the teeth. It turned out that these elongated canines, like the tusks of elephants, were movable in their sockets, but to a much greater degree in the babirussa than in the elephant. Hence there is very little doubt that the abnormal direction taken by these teeth in the babirussa, when in captivity, is due to the animal rubbing them against the walls of its prison.

Among examples of excessive growth the incisors of a beaver were instanced, which had grown so long that they were cut in order to prevent the animal dying from starvation. On examining the cut ends of these teeth, which are now in the Museum of this Society, it will be noticed that the prolongation of the pulp chamber had been opened where its lumen was rather large. This made me anxious to ascertain the result on the structure of the tooth, of this interference.

Two months ago Mr. Bartlett found it necessary again to cut the teeth; for, notwithstanding the logs of wood, stumps, and small trees which were put into the beaver's enclosure, whereon the animals might display their woodcutting propensities, their length had again become detrimental to the beaver. With his characteristic kindness Mr. Bartlett placed the pieces of the teeth at my disposal.

I was fortunate enough to interest my friend, Mr. J. J. Andrews, of Belfast, in the question. He made with great skill some beautiful sections of one of the incisors, and furnished the following report:—

“The pulp is quite obliterated and calcified throughout the whole length of the redundant portion of the tooth. The material filling up the pulp chamber is very granular and irregular in form, with here and there larger masses, interposed. The surrounding dentine is not of good structure, and presents in places large spheroidal masses of secondary formation. In other places large numbers of irregular dark patches, like lacunæ, are visible.”

Odontomes.

Nearly a year ago I brought before this Society an example of what were supposed to be two supernumerary teeth, which were to be seen on the hard palate of a marmot.

Some months after the case was reported, a young marmot

died in the Zoological Gardens, and on inspecting its mouth an abnormal condition of the incisors was detected. On macerating the skull no less than four odontomes were found, one in connection with each of the incisor teeth. It became evident to me that the structures described as supernumerary teeth in the first marmot might turn out to be odontomes also, and such they are; for on cutting away the facial bones the upper incisors were found to extend backwards and become continuous with the abnormal structures on the palate. As these "tooth tumours" are of some interest, it will be well to enter into some details concerning them.

Normally the marmot's dental formula stands shut—

$$1. \frac{2}{2} \text{ C. } \frac{0}{0} \text{ M. and P. } \frac{5}{4} = \frac{7}{6}$$

The upper incisors, starting in the premaxillary bones, quickly infringe upon the limits of the maxillo-premaxillary sutures, eventually finding a resting place in the maxilla itself. In this they agree with those of many other rodents. In the two specimens before us, however, the palatial process of the superior maxilla has yielded, allowing the fangs of the teeth to appear on the hard palate. It would appear that inflammation was then set up, whereby the pulp became calcified and the chamber filled up with secondary dentine.

With respect to the lower incisors in the second case, the tooth projects very little above the alveolar margin, and has a very thin cap of enamel; passing backwards it lies below the inferior dental canal until its extremity reaches the coronoid process, where a considerable cavity exists for its reception. All that portion of the tooth which lies hidden in the bone presents a rugged surface. At the base of the coronoid process the tooth ends in a large odontome, which mount upwards as high as the summit of that process, which has become hollowed out and thinned to contain it, the pressure of the growth having caused considerable atrophy of the bone; in some places the maxilla is so thinned as to yield to the pressure of the nail.

My friend Mr. J. J. Andrews has been good enough to make some sections of the growth, and to illustrate its microscopical appearances and minute structure by some admirable drawings. The following is his description:—

"The tumour has a slightly lobulated appearance, as if made of spherules; the surface in places presents irregular markings. It measures, in length, three-fourths of an inch; in width, one-third of an inch, and is half an inch in depth. Remembering that the lower jaw is only three inches long by

one inch in the widest part, this tumour will be seen to be of some considerable size relatively to the bulk of the animal.

The normal truncated hollow seen in these teeth is completely filled with secondary dentine, except in a few irregular spaces here and there. The main mass of the growth is dentine, some parts of it displaying interglobular spaces; patches of enamel may be seen in some part of the tumour, and a small quantity of cementum surrounds it, and in places runs into the interior."

ALVEOLAR ABSCESS.

An interesting example of this affection occurred in a kangaroo. In the month of March, 1884, one of these animals died, and a swelling was observed below the symphysis of the lower jaw; this turned out to be an abscess connected with the roots of the large procumbent incisors. As far as one can trace the history of events in the case it would seem to be as follows:—

By some mischance the extremity of the two teeth were broken, so as to expose the pulp. Inflammation and supuration of the pulp followed, leading to the formation of an abscess deeply in the substance of the jaw; for it must be remembered that the sockets of the lower incisors of the kangaroos extend as far back as the mental foramen.

As the formation of pus proceeded, the morbid material on the left side made a vent for itself and came out at the mental foramen; later on, the inner side of the maxilla yielded, allowing the pus to pass upwards into the mouth and downwards into the integument lying below the jaw; in this situation it was joined by pus from the abscess cavity in the right half of the maxilla. In this case we have two alveolar abscesses communicating with each other by means of an abscess common to the two, situated in the integument. The interest of the case does not end here however.

In a previous paper attention was drawn to the fact that trivial (so far as life is concerned) in man as an alveolar abscess may be, nevertheless in animals it is a frequent cause of death on account of the purulent secretion being inspired and setting up septic pneumonia. In this kangaroo the abscess gave rise to a condition akin to pyæmia, for the shoulder and elbow joints, were filled with pus, exactly as one sees it in cases of septic poisoning.

Whilst on the subject of alveolar abscess, it may be well to mention that when the skeleton of the celebrated elephant Chuny was being prepared, it was discovered that the socket of one of the tusks contained a quart or two of pus, and on

the tusk itself some inflammatory deposit and an indentation. The learned translator of Otto's "Human and Comparative Pathological Anatomy" (South), concludes that the ungovernable violence exhibited by this brute at Exeter Change was due to pain, the result of the abscess; but Mr. A. D. Bartlett, the able Superintendent of the Zoological Gardens, who is perfectly acquainted with the facts of this remarkable case, says that the animal in his violence, the undoubted result of sexual passion, broke the tusks into pieces and exposed the pulp, thereby giving rise to inflammation and subsequent suppuration.

The case now to be related serves as a striking example of the manner in which trivial anatomical peculiarities modify the baneful effects of disease.

A small rat kangaroo (*Hypsiprymnus*) broke the tip of its left procumbent lower incisor so as to expose the pulp. The extent of damage much the same as in the case of the unfortunate kangaroo whose history has been detailed. The exposed pulp inflamed and suppurated, giving rise to a small alveolar abscess.

In the inner side of the left lower jaw of *Hypsiprymnus* a small foramen will be observed situated in a line with the posterior border of the huge premolar. This foramen was present in all examples of *Hypsiprymnus* I have had opportunity of examining. It communicates with the socket of the incisor tooth, so that if this tooth be withdrawn a continuous tunnel leads from this opening through the tooth socket, and so on to the alveolar border of the jaw.

When the pulp suppurated, the pus could not collect in any quantity, for this foramen offered free drainage, purulent matter burrowing under the mucous membrane, made its way into the mouth, and thus was prevented from giving rise to such disastrous consequences as in the kangaroo whose case was first considered.

The next specimen is of some interest as belonging to an Esquimaux dog, brought to England from the Arctic regions, by the exploring ship "Pandora," and presented to the Zoological Society by Captain Allen Young. An alveolar abscess seems to have arisen in connection with the second molar tooth in the lower jaw; this tooth has necrosed, and a considerable portion of the left inferior maxilla has disappeared so as to lay bare the sockets of the premolar teeth, the margins of the bone being sclerosed. The pus has burrowed and involved the sectorial tooth and exposed its fangs, the tooth having suffered necrosis in consequence. The left canine tooth is broken off short. The sectorial and premolar

teeth of the right side have disappeared, and the alveolus belonging to them has undergone absorption. The buccal mucous membrane was extensively ulcerated. This is the most severe case of its kind that has yet come under my notice.

The subject of alveolar abscess will be concluded with one more example. A marmoset fractured the left upper canine tooth in its socket : this has led to the formation of pus and absorption of the alveolus, which presents a worm-eaten appearance.

These cases, taken with those published in my previous paper, show conclusively that, in common with man, monkeys, from the chimpanzee to the marmoset, elephants, horses, deer, antelopes, dogs, and kangaroos are subject to alveolar abscess.

CONSTITUTIONAL DISEASE AND PREMATURE SHEDDING OF TEETH.

On a previous occasion attention was drawn to the fact that premature shedding of the teeth may result from constitutional diseases. Further inquiry into this matter tends to support the view.

In a crab-eating opossum, obtained for purposes of dissection, the teeth were found to be very loose, and on examining the mouth and detaching the mucous membrane, all the teeth in the upper and lower jaw came away with the membrane, and looked exactly as though they were a row of nails, driven for half their length through a strip of leather.

The condition of the jaws was remarkable, the bones were so thin and soft that they could be twisted and bent like a piece of thin gutta-percha. Every long bone in the skeleton was similarly affected, the disease being in its nature like "mollities ossium." The animal was nearly adult, but all the epiphyses had not quite suffered obliteration.

About the same time a snake, an anaconda measuring 17 feet in length, and of girth proportionate, died, and was brought to the Prosector's Room. On examination, it turned out that every bone in the skeleton was more or less affected with a disease which had much the appearance of rheumatoid arthritis. The articulations between the ribheads and the vertebral bodies were most affected. The parts which interest us most here are the teeth. In the ordinary way this snake should possess four rows above, two on either side, and one row below in each inferior maxilla, in all somewhere about two hundred teeth.

In this snake, however, the mucous membrane was so thick that it obscured such teeth as were in the jaws, and one

could pass the finger over the buccal mucous membrane without perceiving more than three or four. On macerating the skull numerous small stunted teeth were found, the majority of which came away with the mucous membrane, leaving small carious sockets.

Such examples as this of the premature loss of teeth in constricting snakes are by no means uncommon, and I have been led to look closely into the question with the following result. Mr. Charles Tomes has satisfactorily demonstrated that in Ophidia, among others, the teeth do not come into contact directly with the osseous tissue of the jaw by their bases, but that coincident with the development of a tooth a formation of bony matter occurs, whereby the base of the tooth is firmly cemented to the jaw-bone proper. This bone, which Mr. Tomes very aptly terms "bone of attachment," is of loose and open texture, and is easily absorbed : then the tooth falls.

My explanation is this. If, as is so often the case, a snake in confinement suffers from bone disease, the first bony texture to suffer would naturally be such imperfectly formed material as the "bone of attachment," and such I consider to be the case ; this soft bone is affected by disease, softens and allows the teeth to fall, as in carnivora, when affected with mollities ossium, their alveolus absorbs, and the teeth fall out prematurely. It may also happen that as many of these are defective in size, the constitutional disturbance may have some deleterious effect on the formation of the "bone of attachment" ; indeed it is just possible that the early fall of the teeth may be due in part to defective quality and quantity, as well as to premature absorption of the attaching material.

Another very good example of abnormal absorption of the alveolus is afforded by the jaw of the rare little lemur known as Bosman's Potto (*Perodicticus potto*). This animal had lived in confinement for three months previous to its death, which was brought about by atelectasis, resulting from the thorax yielding to atmospheric pressure, having been softened by rickets.

If the jaw be examined it will be seen that in this very short time, even in a young animal, the alveolar margins of the jaws have undergone extensive softening, so that the fangs of the teeth are distinctly visible. This effect is more obvious if the abnormal maxillæ be compared with healthy ones.

The next specimen is the skull of a marmoset (*Hapale jacchus*), also ricketty, but the alveolus is so soft that the

teeth may be moved about in either jaw as freely as though they were set in soft putty. With this array of facts before us—and, be it remembered, these cases are only selections from numbers which come before me—it must be conceded that in animals premature falling of the teeth is associated with constitutional diseases. Do the same facts apply to the human race?

The following is a remarkable case in point:—

During the present year I presented to the Museum of the Middlesex Hospital a skull of an old woman which presented the following peculiarities. The entire skull had suffered general diminution in size and thickness; its weight is fourteen ounces, as compared with twenty-four ounces the weight of an average European skull.

The alveolar margins of both jaws have suffered atrophy to such an extent, that in the superior maxilla the alveolus is on a level with the hard palate, whilst the lower jaw is nothing but a slender rod of bone weighing one ounce, as compared with three-and-a-half ounces the weight of a lower jaw of a lad of twenty years.

The degree of absorption in the upper jaw may be estimated from the fact that the symphysis menti projects one inch beyond the most anterior limit of the premaxillary bone. This extensive atrophy was not limited to the skull, but was manifest throughout the entire skeleton, for all the bones from the femur to the terminal phalanges were effected by this peculiar "osteoporotic" process.

In my previous paper on these subjects I expressed myself cautiously as to the probability of premature absorption of the alveolus in man being really not a local affection, but associated with some general disturbance of the osseous system. Further inquiry into the question has strengthened that conviction, and it may now be stated that in many instances such is the case.

It must be borne in mind that in drawing conclusions as to the nature of the absorption of alveolus in the preceding cases, every care has been taken to exclude those examples of absorption of the alveolus which are so often associated with a large accumulation of tartar on the teeth. If the present series of cases be examined it will be clearly seen that the teeth are perfectly clean and free from deposit; this feature seems to be absolutely characteristic of this form of premature absorption of alveolus, viz., that it is unaccompanied with deposition of tartar.

The specimen now exhibited reveals a very different condition. It is the lower jaw of a Macaque monkey, whose

teeth are crusted over with a large quantity of tartar, and at the same time there is actual absorption of alveolus around the teeth so affected. The skeleton of this monkey was in all respects healthy, no trace of rickets being observable. If the jaws of the macaque be compared with those of potto, the following facts come out very strikingly.

In potto the bone betrays no evidence of inflammation; in the macaque the bone is rough and porous, and in places gives one the impression that some new bone had been deposited from the periosteum consequent upon inflammation. Whether the tartar causes the inflammation or is a result of that process is a point for discussion, but it affords a ready means of distinction between the two classes of absorption, viz. :

One is a constitutional affection, and non-inflammatory. The other, local and inflammatory.

(To be continued.)

IRREGULARITIES OF THE TEETH.*

By Dr. C. R. SMITH.

MR. PRESIDENT, MEMBERS AND VISITORS.—The subject of “Irregularities of the teeth” is a vast one and their treatment admits of various methods, often taxing the perseverance of operator and patient and the ingenuity of the former. It is, moreover, a subject with which each is familiar, and I trust no one will fail to impart to others the benefit of their experience.

We must admit that “an even set of teeth” is an important feature in “personal appearance,” therefore, though the “irregularities of temporary teeth” may not require immediate interference, it is advisable that the advent and progress of succession be carefully watched.

The defect in position in temporary teeth, may be said to be confined to the incisors, which are sometimes slightly crowded. In the lower jaw one of the centrals or both may be turned so that the median side stands in the position which should be occupied by the lateral surface. The fangs of the lower temporary incisors being round and of less diameter than that of the long axes of their crowns, give more room for the contiguous teeth when turned in this manner.

As it is unusual to interfere with or treat these deformities it will be as well to pass on to those of the permanent set, and for convenience to classify them thus :—

*Read before the Students' Society of the Dental Hospital of London.

1—Prominent upper or lower jaw.

2—V-shaped maxilla.

3—Crowded mouth.

Often causing :—

a. Canines to be erupted high in the alveolar arch.

b. Bicuspids to be erupted in the palate.

c. Teeth to take a position within or without the dental arch, or which will require rotating.

In order to estimate the case, and obtain a correct idea as to where the disfigurement lies, it is useful after having noticed the appearance of your patient in profile, the mouth being closed, to extend the lips across the teeth. This will suggest at a glance any defect in arrangement of the arch, and should one side be more pronounced than the corresponding it cannot fail to be noticed.

In the first group due to excessive or deficient development of the jaw in proportion to the teeth which it carries an alteration of socket becomes necessary. In the lower this can only successfully be remedied while the child is growing, or rather during the development of the ramus, when a skull-cap may prove of great advantage. In excessive development of the alveolar portion of the jaw there will be spaces left between teeth.

Here some practitioners would make a plate of metal or vulcanite and by means of elastic pressure upon the front teeth bring them into closer opposition.

Cases of this description are far less frequent than those of a reverse character. These should be treated early and will necessitate the removal of teeth.

The question here arises :—

Which are to be sacrificed ?

Without doubt carious ones first, as a cause of future trouble is thus removed.

But supposing all teeth to be sound ?

“Statistics” show the 1st permanent molar is most prone to decay, and the 2nd bicuspid more so than the 1st. If, however, the patient be twelve years of age, it should be remembered that a 1st molar has been in the mouth some six years, and if then sound has for a longer period resisted the influences of decay. The bicuspid though also sound has only been exposed to like influences for a year and a few months. Mr. Salter states that a 1st molar free from decay at twelve years is as likely to remain so as any other molar.

In this case, then, would it be better to remove these or bicuspids ?

The molar is a more useful member for mastication and

the remaining tooth would be subjected for a shorter period to the ill-effects of a plate.

On the other hand, a bicuspid is perhaps less liable to decay, and more noticed when lost, especially if the space be not completely filled up.

It has been strongly advised that not one, two, or three, but four molars or bicuspids should be removed, but it is possible that parents might object to this mode of treatment, though one is more likely to ensure perfect articulation.

Space having been obtained by extraction, the bicuspids and then canines may be pegged with wood, and afterwards the incisors brought into position. Or a plate may be fitted to the back teeth, with another and smaller around the incisor region; these are attached by means of springs or elastic bands, and the six front teeth brought back in a body.

Prominent lower teeth may be treated in a similar manner, though they are less frequently interfered with owing to their being more hidden by the lips.

The V-shaped maxilla in which the teeth occupy two converging lines meeting at an angle in the anterior part of the jaw, is usually accompanied with an extremely high palate. The defect may in rare instances correspond in both maxillæ. Like many other deformities of the mouth it is often hereditary. It may arise from congenital weakness, enlarged tonsils, and orbicularis, the mouth being kept open during respiration. Idiots usually present this form of jaw. Its cause has been attributed to a want of proper development in the pterygoid plates of the sphenoid upon which bone the superior maxilla is largely dependent for development.

This class usually require an expansion of the arch which may be accomplished by:—A plate with an inclined plane made by scraping or cutting the teeth in the contracted part of your model, previous to mounting in vulcanite is an extremely good method. The objections that have been raised to this are, that it will probably interfere with the eruption of the permanent teeth of the same region, and moreover will rely entirely upon the voluntary efforts of the child; this may be overcome by a ligature, though thereby a risk is incurred.

My first patient at this hospital was a regulation case; it required nothing more than the somewhat projecting canines bringing into line, naturally my pride was immense at being allowed to operate, but after a month without the slightest improvement that “somewhat abated.” It was then pointed out to me by one of the surgeons, that the plate was not worn. This tempted me to tie a ligature round the bicuspid;

the patient arrived in the course of a week, the tooth still tied with silk but uncommonly loose and far below the level of its neighbour.

Another method is the jack screw, lengthened by means of a nut and applied from one tooth to that of the opposite side this is useful where these require more expansion than the remainder of the arch.

Dr. Coffin's expansion plate is perhaps most generally used and is made in the following manner:—A spring wire curved upon itself, usually three times, is inserted into a vulcanite plate by its free ends, when this is hardened, the plate is sawn through in the median line, and the spring bent with pliers exerts a lateral pressure upon the arch. This may be obtained in a greater degree either anteriorly even, or posteriorly, by judicious manipulation.

Preference is usually given to pianoforte wire, as it is of a suitably high temper; its tendency to rust and become brittle may be overcome by a small piece of zinc imbedded in contact with the ends, or by tinning the wire. Thus the arch is widened, more space gained; the front teeth if irregular, being afterwards brought into position.

Passing to the "3rd Class" crowded mouths, we rarely, indeed never see two cases alike, and so many varieties occur that it is my intention only to discuss the most typical.

Crowding and over-lapping of the inferior incisors is a common form of irregularity, and necessitates lateral relief by removal of a bicuspid, or in extreme cases the most prominent of the incisors, the gap thus caused readily fills up, and the loss of the tooth is scarcely to be observed.

In the upper the laterals often appear within the arch, biting behind the lower incisors. These must be brought into position, and the most usual though not the best method is with pegs of hickory or compressed wood.

I do not consider these a good medium, as the moisture of the mouth upon which their expansion depends swells the individual fibres in diameter and but slightly in length. They become sodden, soft, and emit an unpleasant odour; nor do they exert such decided pressure as vulcanized pegs, or ordinary rubber let into the plate with a dove-tail, and if needful tied in place with silk previously waxed.

It may be advisable in some cases to raise the bite by capping the molars. It is a query whether in all cases in which the upper teeth close behind those of the lower this must be done. The natural position of the jaws is not complete closure. With pressure applied the teeth may be free to pass outwards, except during meals. At that important time to the

child, the plate so carefully constructed to prop the mouth open, may possibly be discarded.

The canine teeth are very prone to assume a wrong direction and position. This has been said to be due to the retention of their predecessors : in some cases it appears to be due to the opposite cause, namely : the temporary tooth being extracted early, the already erupted bicuspid will move forward towards the lateral, so when the permanent tooth is cut no room is afforded to it in the arch, and it takes a position external or even in the palate.

Owing to their development canines have a tendency to appear prominent, but if there be sufficient space, may fall naturally into position. When they do not, and dentist's aid is required, having secured room by an extraction if necessary, a plate must be made to regulate the projecting teeth. Vulcanite or metal are equally suitable. Spring wires, either embedded or soldered, as the case may be, are fitted to the necks of the teeth and of sufficient length to allow bending in from time to time, in order to exert pressure towards the palate. Another method is with elastic bands attached to the plate and placed over the irregular members.

Where the two centrals alone project, an excellent plan is to stretch from its fixed attachment at the median line of a plate, an elastic band between these teeth and then fastening a small piece of wood to it, allow this to remain external to the prominent incisors when they will rapidly improve in appearance.

If the treatment by means of wires prove tedious, and there be sufficient space between two contiguous teeth to allow, an elastic band may be passed from wire to plate, in order to exert greater force.

Canines may be erupted internal to the arch, or far back in the palate, in the latter event should the remaining teeth be even, it would be advisable to extract.

In cases of this character it may appear possible, but with great difficulty, to achieve success.

Then it should be taken into consideration the age, sex and appearance of the patient ; the length of time the plate must be worn ; the amount of patience and perseverance required ; if it be necessary to enlarge the arch ; the desirability of so doing.

In other respects the patient may present small features, and when the teeth are eventually regulated they may appear out of proportion with the general aspect of the face. It may cause close apposition of the whole set of teeth, which may tend to interstitial decay.

Canines and other teeth may be brought forward by means of a plate with a wire fitted external to the whole arch, to which is attached elastic bands exerting pressure upon certain teeth.

In some cases it may be advantageous to bind an elastic band in and out so bringing into line those teeth requiring such treatment.

If a second bicupid has been lost and it is required to draw the first back, it may be effected with wire upon the same general principles as those related. When bicuspids are erupted in the palate the quickest and best method to rectify this deformity will be to extract the useless organs, as they are of no avail in mastication, and often cause a defect in articulation.

Those teeth farther back are rarely treated when irregular, as they are hidden, and considerable pressure would be required to regulate molars.

Proceeding to the last group it is my intention to discuss "teeth which require rotation."

Two plans are open to the operator—that of rapid torsion and that of rotation by means of a plate.

Whether the former might be employed more frequently than is usual at present, is a matter for consideration, as also if it be liable to cause necrosis. The best age for this operation is eight years, and it is preferable if much twisted to turn the tooth half the distance, completing the rotation after an interval of a week or two. Straight forceps, the blades of which are protected with lead, tin-foil or gutta-percha, being most suitable as less likely to injure the tooth. After each sitting the gums may be painted with aconite and iodine, or a leech applied if necessary. If rotation by means of a plate be chosen, they may be accomplished with two wires acting upon the tooth in opposite directions; or with a little metal collar fitted to the neck having a soldered ring on either side for the attachment of india-rubber bands thus turning the tooth upon the same general principles.

Complicated cases necessitate a combination of treatment, and in all such greater satisfaction will be found if more than one plate be constructed.

The object in view is to alter the position of certain teeth. To do this the mouth must change in form, therefore a single plate, though perfectly adapted to the first model will soon lose its fit and become little better than useless.

In all cases a second retaining plate will be necessary, as the deposit of bone is not equal to its absorption, and it is found that as a rule teeth do not become firm within their

sockets until twelve months after normal position has been attained by mechanical aid.

A few words upon india-rubber bands, and I will not detain you longer.

I presume no gentleman present indulges in the habit of smoking; but it is possible that for the convenience of friends who do, you may carry those pretty little match-boxes, which when empty are thrown away. If before doing so they are deprived of their elastic bands, these (that is the bands), will be found stronger and better than any others you can obtain for regulation plates.

It has been my endeavour not to weary with details, but bring before you different methods of treatment, trusting that some will agree with me where an opinion has been given. I expect to be called to account before the close of the evening, so hope to make a few friends by thanking you for listening to such a well-known subject as the one it has been my privilege to bring before your notice.

I must also express my gratitude to Dr. Walker for so kindly offering the use of his lime-light, the entire arrangement of which has been undertaken by Mr. Campion, and must not omit to thank Mr. Goodby to whom I am indebted for the chief part of the diagrams.

SOME POINTS CONNECTED WITH THE TREATMENT OF FRACTURE OF THE INFERIOR MAXILLA.*

DISCUSSION UPON MR. NEWLAND PEDLEY'S PAPER.

Mr. Henri Weiss said he was sorry Mr. Hammond had not been present to hear the paper which had just been read. The testimony Mr. Pedley had given as to the value of Mr. Hammond's splint was highly complimentary to its inventor, but there were one or two points in the paper which, speaking on Mr. Hammond's behalf, he (Mr. Weiss) did not like to pass over without notice.

Mr. Pedley had spoken of the difficulty, in some cases, of getting a model of the mouth. This must be admitted to a certain extent; but it must not be forgotten that it was not necessary to obtain an accurate impression of the whole of the teeth and gums, such as was required for other purposes. An impression of the *crowns* of the teeth was all that was required. Nor was it necessary to use a tray; a piece of zinc could be readily cut and bent into shape, and would answer

* A Discussion held before the Odontological Society.

the purpose perfectly. On this he built up some soft wax, and had seldom any difficulty in getting a sufficiently good impression.

Then Mr. Pedley seemed to think that it was quite sufficient to fasten the splint to two or three teeth on either side of the fracture. Mr. Hammond attached great importance to distributing the pressure as much as possible, and therefore always made use of all the teeth that could be made to serve—even the wisdom teeth. For it must be remembered that however firmly implanted teeth might appear, they were easily loosened or moved by a comparatively small amount of force constantly applied, as was very likely to be the case in a broken jaw, with the usual tendency to displacement of the fragments.

Lastly, he gathered from the paper that Mr. Pedley did not attach much importance to the mode of tying, though this, again, was a point on which Mr. Hammond laid great stress; he held that unless care was taken in this part of the operation there might be a liability for the fracture to gape at the lower edge. With regard to Mr. Pedley's partiality for the use of gold wire, he (Mr. Weiss) could only say that he found iron wire answer the purpose very well; it turned black, but was sufficiently durable, and did not cause any local irritation.

Mr. Henry Moon said, it might be supposed that he would naturally be inclined to agree with the views expressed by Mr. Pedley in his paper. But he would at once admit that Mr. Hammond's method of treatment was the best, and in some cases the only one which could be used with success. He felt sure that Mr. Pedley had not the smallest intention of disparaging Mr. Hammond's invention, or his method of using it. All that was claimed for the modification of it which they had adopted at Guy's Hospital was, that in cases where there was not much displacement it gave good results, and that there was certainly a saving of trouble in not having to take a model, or to solder the ends of the wire. They fully appreciated also the advantages of Mr. Hammond's method of twisting up the binding wire; indeed Mr. Pedley had described this at some length in the course of his paper, the general purport of which Mr. Weiss appeared to have to some extent misapprehended.

Fractures of the upper jaw were more rarely met with than those of the lower. He (Mr. Moon) had, however, met with a case in which the superior maxillary bones were separated from each other, the intermaxillary bones being also separated. There was also a transverse fracture under

the orbits, and the lower jaw was broken as well. He (Mr. Moon), having secured the lower jaw by means of Hammond's splint, proceeded to fix the upper by the same means. But he found that, owing to the fractures in the malar region, there was a tendency for the jaw-bone to drop downwards and backwards, and at the end of a week he was obliged to remove Hammond's splint, and apply Gunning's. The case then progressed very satisfactorily, and recovery took place without any noticeable alteration of features.

Mr. West said he occasionally had to deal with very severe cases of fracture of the jaw at the German Hospital. He had been called upon to treat one only a few weeks since. The jaw was broken between the left central and lateral incisors, and the patient had been in hospital a fortnight before he saw him. There was a considerable amount of displacement, and the patient was subject to fits. Hammond's splint being inapplicable, he (Mr. West) took a model, cut it across at the seat of fracture, and refixed the fragments in their proper relative positions. He then made a metal cap, lined it with gutta-percha, and put this on whilst the material was soft. An aperture was cut opposite the seat of fracture, so that the position of the fragments could be seen. The result of the treatment was very satisfactory.

Mr. J. H. Redman, of Brighton, related particulars of a case of fracture of the upper jaw, which he had been called upon to treat at the Sussex County Hospital. The patient had been struck with great violence by a block of wood thrown off by a circular saw. This made a large gash in the cheek and lip just to the right of the nose; the whole upper jaw was freely movable, and dropped considerably, being apparently held only by the soft parts; the vomer was detached from its connections with the superior maxillary and palate bones. An impression of the mouth was taken, and a vulcanite plate made to fit the upper jaw, with wings passing to the outside of the cheek on each side, and held in position by means of a four-tailed bandage. This held the jaw firmly in position, and the patient made an excellent recovery.

Mr. W. Harding (Shrewsbury) said that for some years he used Gunning's splint, but lately he had adopted Hammond's, and was very much pleased with it. He could not, however, induce the surgeons attached to his Infirmary to use it, on account of the difficulty of soldering the ends of the wire.

Mr. Walter Coffin said he should be glad to know what was the best sort of binding wire to use. Mr. Pedley had recommended gold wire, but this would be found too expen-

sive for some of the cases they were called upon to treat. He (Mr. Coffin) would suggest that probably aluminium wire would be found to answer the purpose well.

With reference to the difficulty which was sometimes met with in taking models of the mouth, he had seen it stated that a sufficiently good impression could be obtained by mixing a good quantity of pyro-phosphate of zinc, making it into the form of a roll, introducing this into the mouth with oiled fingers, holding it until set, and then removing it.

Mr. S. J. Hutchinson said he hoped Mr. Pedley would present the specimens with which he had illustrated his paper, or at all events duplicates of them, to the museum. He thought Mr. Moon's method of fastening the ends of the wire was a valuable improvement. He should be glad if Mr. Pedley would inform him whether he found Mr. Hammond's splint as useful in cases of multiple fractures of the jaw as in the simpler cases; and also what form of apparatus he found most satisfactory in cases where the teeth had been lost;—did he use Gunning's splint under these circumstances.

Mr. Storer Bennett said he was glad of the opportunity of expressing his opinion of the value of Hammond's splint, even in the worst cases. Thus he had lately been treating at the Middlesex Hospital, in conjunction with Mr. Lawson, a case of fracture of the lower jaw, which had previously been treated elsewhere for three months, but the fracture was still ununited. There was a sequestrum between the fragments; this was removed, the ends of the bone resected, and Hammond's splint applied. Firm union then took place in about six weeks. He wished also to confirm what Mr. Pedley had said as to the importance of scaling as a preliminary operation; it greatly facilitated the passing of the binding wire.

Mr. Pedley, having been called upon by the President to reply, said he quite agreed with Mr. Henri Weiss that a full-sized Hammond's splint was a more perfect form of apparatus than the modification of it which he had described in his paper. Still, the latter sufficed to give satisfactory results in a considerable number of cases, and it could be put on by any general practitioner, whilst an average general practitioner could not put on the full-sized Hammond's splint. So far from not having attached sufficient importance to Mr. Hammond's figure of 8 method of putting on the binding wire, he had actually quoted that gentleman's directions for applying it verbatim in his paper.

In reply to Mr. Coffin, he would say that the wire best for the purpose was what was commonly known as "binding wire,"

and it should be as thick as could be easily passed between the teeth.

He could assure Mr. Hutchinson that Hammond's splint was just as applicable to cases in which there were two, three, or four fractures as to those in there was only one. It could be applied to any case in which there were firmly implanted teeth in each fragment; the wire must not, however, be attached to loose teeth or to those immediately contiguous to the lines of fracture. He was very much obliged to all those who had joined in the discussion.

The president then announced that at the next meeting, to be held on Monday Dec. 1st, Mr. J. Bland Sutton, F.R.C.S., would read a paper on "Comparative Dental Pathology."

The Society then adjourned.

ANÆSTHETICS AND THEIR ADMINISTRATION.

By J. WILLIAM ROBERTS, L.D.S., F.R.S., Glas.

In December, 1844, Mr. Wells, surgeon-dentist, of Hartford, Connecticut, United States, inhaled the gas, while another dentist, Dr. Rigg, drew one of his teeth without his feeling any pain, and shortly afterwards the new agent was employed and found useful in larger operations, and from that time forward the use of nitrous oxide gas has steadily increased.

The therapeutical effects of chloroform and æther are nearly similar; there is a little more feeling of suffocation and exhilaration during the administration of æther, than during that of choloform, and recovery is usually slower, otherwise there is little difference.

In the method of administration very little improvement has taken place in that of chloroform during the forty years of its use; in 1842 it was given upon a piece of lint, or a napkin, and although several apparatuses have been introduced during these years, each of these have seen their day, and it is still given upon the napkin or lint. Æther has fared somewhat better, as we have now several very good apparatuses for its administration, notably that of Clover, which regulates the æther vapour and the air.

I have found the India-rubber face piece with supplemental bag, used in the administrations of nitrous oxide gas, by placing a sponge inside it, and kept in position by a piece of wood or wire, answer very well for the administration of æther, and being much more economical than the towel cone

and sponge, as the patient breathes air through the æther and exhales through the expiratory valve, or into the supplemental bag if wishing to economise the æther.

In the administration of æther, or chloroform, care should previously be taken to see that the patient is not suffering from any organic derangement of the heart, brain and lungs, if given with these organs in a morbid state of disease. as most practitioners agree that fatal consequences may occur Professor Lister, of Edinburgh, says, "we have two dangers, the danger of the anæsthetic and the physical shock, which is the lesser evil?"

The first inhalation of chloroform in many patients creates slight degree of irritation of the fauces often increases the flow of saliva and generally excites a desire to swallow; there is sometimes an irritable cough, this may be due to the decomposition of the chloroform, or in the presence of bodies foreign to pure alcohol, produced by the distillation of grain in the decomposition of nitrogenous matter, or from bronchial irritation.

The patient experiences a sense of warmth in the chest and extremities, an anxiety in repeated and trivial interrogations and injunctions, a watchful cognisance of all going on.

The passing away of agitation; an interval of tranquil breathing, the accession of forgetfulness, interrupted occasionally by a sudden return to consciousness and wavering confusion.

The breathing again becomes tranquil, the eyelids occasionally raised, apparently in warning that insensibility is not complete, with these re-closing the last gleam of mental power is darkened and all is purposeless and unheeded; a few more inspirations and the drowsy snore, the muscles become relaxed, the conjunctive quite insensible to feeling, the pupil to light, and anæsthesia is complete.

We now come to the third of our remedies, viz., nitrous oxide gas, this requires more care in its apparatus and administration, to prevent the patient inhaling air with the gas, and care should be taken to have face piece, taps, joints, and tubing in perfect condition. It is preferable to use that made without wire inside.

Mohair covering has its disadvantages, the rubber tubing being likely to perish under it without our observation. Air is drawn in; the patient becomes excitable and frequently we find that we cannot put him in the anæsthetic state, without using a large quantity of gas and occasionally not at all, the cause for which we are apt to blame the gas.

I have found that it is better to allow the patient to breathe

several deep respirations of air before turning on the gas, this clears out the residual air from the lungs, the gas may be then turned on, allowing the first three or four exhalations to escape through the valve; the tap to the supplemental bag may now be turned on a little way so that a portion of the expired gas goes into the bag, the gas in the bag may be re-inhaled two or three times, as the nitrous oxide gas exhaled is impregnated with but about five per cent. of carbonic acid gas, therefore, after every third or fourth exhalation the bag may be emptied by pressure.

In giving gas in this manner I find that there is less of the suffocating sensation during the first stage, and although it takes a longer time to produce anæsthesia it can be pushed to a greater extent, and recovery is usually pleasanter.

No food should be taken by the patient for four hours previous to having chloroform, and it is advisable that nearly the same rule should be applied previous to taking nitrous oxide gas.

Previous to administering anæsthetics care should be taken to have the patient's neck bare, the chest perfectly free of tight clothing and in the case of females their corsets loosened.

The tooth or teeth to be extracted should be thoroughly examined, the forceps, mouth gags, and all things likely to be needed laid out in order, but out of sight of the patient. During the administration keep a sharp look out in every direction to be alive to every danger, and be prepared to act at once in every emergency; as here, above all other occasions delay or indecision is fatal. The pulse should never be permitted to fall during the inhalation below sixty, or at most fifty-five beats, in a minute. During recovery of consciousness no violent measures should ever be resorted to for such a purpose, no loud speaking or shouting into the patient's ears, no shaking of the patient and no attempt to awaken him the moment the operation is over.

The patient should be allowed to be perfectly at rest, to have access of air and not be permitted to speak or be spoken to, and silence in all surroundings so long as mental confusion exists.

In all cases anæsthesia to be either satisfactory or safe, should be complete, as, although the patient may be unconscious to pain, the heart may through the ganglionic system be affected by the operation and syncope result, as we know that shock tends to interfere with the heart's contractions by the influence of the cerebro-spinal system on the cardiac ganglia.

We now, Sir, come to the most important part of our subject, a part which I hope will rarely be required by any of us, but one which we ought in honesty to the unfortunate creatures who come under our care, to be perfectly prepared for, viz., what to do in case of accident. Upon the first symptoms of danger presence of mind, a cool head and a steady hand are very essential, without these, there is confusion and possibly serious results to the patient.

The first thing is to raise the lower jaw, pull forward the tongue with a pair of dressing forceps, clear all the blood and mucous from the mouth and larynx with a sponge. Ammonia held to the nostrils, cold water dashed upon the chest, the chest rhythmically compressed, artificial respiration performed and galvanism applied, the positive pole to the nape of the neck and the negative to the region of the heart.

Artificial respiration may be performed in two ways, that of Dr. Marshall Hall, which consists in laying the patient on his face on the floor or the table, and then turning him over on his back. By this means the weight of the body compresses the chest while it expands again by the natural elasticity of the ribs; or by Dr. Silvester's method. The patient should be laid upon his back then both his arms should be raised above his head held there for a second or two and brought down again on the sides of the chest with some degree of pressure. After a second or two repeat the process. Thus the muscles of the humeries serve to dilate the thorax, while it is compressed by the adduction of the arms.

This plan is as efficient as any other while it has the additional advantage of appearing less rough in practice.

It is with considerable trepidation that I submit this paper to you for discussion, feeling the consciousness of its imperfections, although it may be said by some of my censorious friends that I am anxious of adopting Rip Van Winkle's method of anticipating lapse of time, still my excuse is, whatever may be the limitations of our specialty, the fact remains that the Licentiate in Dental Surgery is daily called upon to administer anæsthetics with or without the presence of a general practitioner, and no practitioners medical or dental should attempt to use these remedies without a thorough practical and theoretical knowledge of their chemistry and therapeutical effects.

ANÆSTHESIA BEFORE APPLYING ARSENIC.—A writer in the *Dental Cosmos*, says chloroform applied to a pulp just before the application of arsenic will prevent the pain often attending its destruction.

PHLEGMONOUS SWELLING IN THE NECK AND EMPYEMA, THE RESULT OF ALVEOLO-DENTAL PERIOSTITIS AFTER THE EXTRACTION OF A TOOTH.

By DR. A. VIGOT,

In a most interesting paper on "pleuritic effusions" recently published in the *Gazette des Hopitaux*, Dr. A. Vigot, chef de clinique médicale à l'Ecole de médecine de Caen, relates the following remarkable case of empyema supervening on an attack of alveolo-dental periostitis after the extraction of a tooth.

L. Joseph, aged fifteen, a cabin-boy on board a merchant vessel, was admitted to the Hotel Dieu of Nantes, in the "clinique externe of Professor Heurtaux," on the 16th of February, 1883.

He is a fine lad, apparently of a wonderfully good constitution. The sailor who accompanied him informs us that he had a tooth (the second right lower molar) removed six days ago. He subsequently exposed himself to the cold and to draughts. His mouth has been painful ever since and his sufferings have increased from day to day.

February 17th, tongue is very much swollen and prevents his speaking, the jaws cannot meet. Neck tense, red, shining, both the parotid and submaxillary hollows were effaced. A phlegmonous swelling can be felt below the jaw which pits on pressure.

Respiration is impeded, swallowing is performed pretty easily; on looking into the mouth, nothing is seen beyond some slight infection of the pillars of the fauces.

The tongue, as already stated, is very large, on its surface is a thick coating very similar to false diphtheritic membranes and if it were not for the freedom of the throat one would be led to believe the case was one of diphtheria.

The boy's pulse beats at the rate of 108 per minute and his temperature is 30° C. (102° 4 F.).

February 18th. The dyspnoea is more marked, the neck has further increased in size, no fluctuation can be felt. Mr. Heurtaux nevertheless made two incisions, one in the middle line below the chin the other on the side of the neck. Pulse 120.

The patient died at eleven o'clock this morning.

Post mortem. The abdominal viscera show nothing worth mentioning.

On opening the thorax a quantity of pus flows from the right pleural cavity, we have to deal with a case of purulent pleurisy. On the mediastium are slight streaks of pus.

On the left side, the lung is congested and appears to be agglutinated to the parietal pleura, which is injected; this is evidently the first stage towards the formation of pus.

In the pericardium the serous membrane is also much injected.

Let us now prolong our incision as far as the median portion of the mouth, and saw through the symphysis and then turn the two portions of the jaw to either side. We find the whole cellular bed around the submaxillary gland infiltrated with pus.

On the right side we find the bone exposed at this point, we are now just below the alveolus, from which the tooth was removed. On introducing a probe into the opening of the alveolus, we find it goes right through the maxilla and enters the purulent focus. The bone is completely denuded of periosteum at this spot as well as in the neighbourhood of the left submaxillary gland.

The purulent infiltration can be followed down the neck along the pharynx larynx and trachea. It reaches lower and lower in front of the vertebral column and enters the posterior mediastium, which it perforates in its middle portion. The close connection between the purulent infiltration and the purulent pleurisy, due solely to this invading infiltration, can be readily made out here.

DENTAL STUDIES AT BERLIN.—Fresh facilities are being offered to those who visit Berlin for purposes of study. Dr. Busch, assisted by Dr. Laver and Dr. Klingelhofer, will have under his direction a Royal University Clinical Hospital for diseases of the teeth and mouth. To those who have as yet not visited Berlin it may be said that perhaps no other city offers so large and so varied a clientele. The teaching is so practical, and the *materiel* so abundant that he is indeed fortunate who can spend some time there for study and practice.

THE University of Leipzig has also determined upon opening a special dental school in the Winter term. It is said that Professor Hesse has undertaken the management of this new school and his name will guarantee its usefulness and efficiency.

British Journal of Dental Science.

LONDON, JANUARY 1, 1885.

RETROSPECTIVE AND PROSPECTIVE.

It has been said that parting with the old year is kindred to losing old friends. Three hundred and sixty-five days with some odd hours go to form the year. Of these many days are eventful, many productive of happiness, not a few marred by sorrow. In the world of applied knowledge, changes come but slowly, and even the kaleidoscope of the faces of the chief actors in any particular professional sphere show but little variety in so short a time as a year. We have little to do with the individual save that we wish him all health and happiness in 1885, but we have everything to do with the profession of dentistry. When we traverse in thought of the long period during which we have represented the whole dental profession we cannot but feel that ours has been no easy task, it has been a post of honour and as such it has ever been our aim to perform its duties and fulfil its responsibilities. Liberty has been our watchword and Independence our countersign. In no circle of experts are such rallying words more needed than among ourselves. That all are aiming at higher appreciation of what the Dentist's profession should be, needs hardly the saying, but no one unless he is rigidly impartial, absolutely free from party bias, can see the weak points in the armour.

In the past year many events which should form food for pleasurable reflection have been enacted. The success of the Midland Odontological Society seems now established and if the energy and ability displayed in its initiation be still maintained, we may well hope that it will prove a most useful centre for good work among the dentists of the Midlands.

In Melbourne the scientific aspect of dentistry has been fostered by the starting of a learned society, whose object is to promote among its members a constant alertness to grasp new facts and to present them to their fellow-workers. The British Dental Benevolent Fund has been also floated, but it would appear that it has even now been but imperfectly understood. To establish a Fund from which *all* dentists receive aid when aid is needed, is to establish what every man should give to only too readily. It really amounts to an attempt to

incorporate the whole dental profession into our huge friendly society. Such societies have been initiated for the benefit of almost all grades of the social community from the highest to the lowest, and hardly a profession exists which will not confess how much its members have profited by the aid of such a fund. Yet among ourselves the measure has met with but a cool response and many still hang back. Kindred in object to the British Dental Benevolent Fund is the British Medical Health and Sickness Assurance Association, with which we have as a branch of the healing art become incorporated. Its members—and all qualified dentists are eligible—enjoy freedom from all fear of loss, through illness or incapacitation. For young and busy practitioners who depend wholly and solely upon their own energy and power of working for their income, illness means in nine cases out of ten ruin, or a weight of debt and difficulty which it is no easy matter to shake off, even should health be speedily regained. To those who have joined the association this fear has lost its terrors, for should that dire calamity, a long illness befall, the fund pays a sum at least enough to materially help the sufferer to tide over the worst.

The crusade against bogus diplomas in America and Germany is engrossing much attention and justly. That the public should be permitted to be gulled by charlatans who are as ignorant as they are impudent is a great and a crying evil. We may hope that the result may reward the well advised exertions of those who have taken the matter in hand.

Annual Gatherings have been not without interest among dentists. The International Medical Congress held at Copenhagen cannot be said to have been so successful for us as we could have hoped. It is really matter of regret that so important a branch of medicine should receive comparatively so little attention at these international meetings, and that so few should attend. The Association Meetings appear to have been up to the average in interest, and certainly yearly these gatherings attract more attention and interest both among the members and even among outsiders. The losses to the profession have happily been few, but one loss it has sustained, and that is in the departure from England of Mr. Alfred Coleman, whose name has been for so many years honourably famed in the very forefront of the dental world and literature.

Of the future what shall we say? Recent changes in the R.C.S. and R.C.S.I. examinations will we hope affect the profession favourably. The attempt which has been made

to draw attention to the condition of the dental departments of our General Hospitals may bear useful fruit. To increase the junior staff would unquestionably open the door to prestige and subsequent preferment to many deserving juniors, and would we imagine prove highly satisfactory. It is clear that at present the dental staff is usually wholly inadequate to the possible clientele.

In our speaking of our own future we may be permitted to say, that several of the novelties which were introduced during the past year have been most cordially received. Our abstracts will as heretofore be continued, as they fill a void which has so long been felt, and fill it in a way which has proved highly useful to many a busy practitioner.

DR. STOCKTON ON SAVING TEETH.—Dr. Stockton, writing on this subject, says, "When you can save a good tooth, or roots than can be made healthy, by all means do so. There are too many teeth extracted. Get the root healthy, and if you do not wish to crown them, put your artificial denture over them—especially so with the lower set. Many dentists remove everything in the way of teeth and roots, in order that they may have an easy job in putting up the new ones—it looks better, but it will not work so well. If I had nothing else to say for New Jersey, it would be this: 'Keep every tooth and root in the mouth you can.' That old Italian spoke words of gold when he said, 'Don't let any dentists have a tooth.' So say I. This sacrifice of the teeth is one of the greatest curses of our times. The forceps are sometimes necessary."

A DENTIST IN LITIGATION WITH A PATIENT.—In "Items of Interest," a narrative is told which certainly points a moral even if it does not adorn a tale: Mary McMullen, who sued Dr. Schwarzschild, a dentist, August 12th, 1881, for having charged her more than the agreed price for filling her teeth, and then removed the filling because she refused to pay, has recovered \$200 as damages, \$66 as witness fees, and \$17.50, the amount she paid defendant for work done.

PLASTER OF PARIS SPLINT IN FRACTURE OF THE JAW.—

An American surgeon, writing in the *Eclectic Medical Review*, narrates the following method of treating fractures of the jaw. "On the nineteenth of last September, Jno. R., aged thirty years, a huckster by profession, was quietly riding one of his mules to water, when suddenly the mule jumped, bucked and threw him, placing one hind foot in the prostrate rider's face. Upon examination, the lower jaw was found to be broken on the left side just in of the last front molar tooth, a simple transverse fracture. The usual Howe splint was ap-

plied, but there was a troublesome slipping in of the anterior fragment of the broken bone which it was impossible to overcome with that splint. After trying several other varieties of splints with no better success, a plaster of Paris splint was put on in the following manner. Some fresh plaster was obtained, which was mixed up with water in a glass tumbler, a small quantity of salt was added to facilitate hardening. As soon as the plaster began to stiffen up a little it was poured into a muslin chin cup and applied to the entire lower jaw, over which a thin cloth had been put to keep the plaster from direct contact with the skin. The fracture having been reduced, the plaster was held firmly in place until it hardened. This splint accurately fitted the jaw, made a hard, firm chin-piece which was held securely in place by a leather chin cup with appropriate straps and buckles, constructed by an ingenious shoemaker. Teeth were luckily missing in the right place and the patient was fed on liquid food through a tube. There was no more slipping. The splint was allowed to remain without change for three weeks, when upon the patient complaining of it feeling heavy and uncomfortable, it was removed and a lighter one of the same material and in the same manner was substituted. This was worn for ten days longer, and finally a leather chin-cup used for a week or so.

AMERICAN DENTAL SOCIETY OF EUROPE.—The meeting at Vevay, Switzerland, seems to have been a success. Dr. Bodecker spoke upon so-called Rigg's disease. He recommended the removal of all tartar and washing out of pockets with corrosive sublimate solution of the strength of 1 in 1000. If necrosed tissue is suspected beneath the tissues, he recommends sulphate of zinc in saturated solution. The necrosed tissue is revealed by a dark line along the margin of the gums. A saturated solution of potash with the addition of crystals of iodine is also recommended. Either of these applications should be made, Dr. Bodecker says with a "stiff nerve plugger" wrapped with cotton and carried well up under the gums. This treatment is followed after two applications by the use of tartrate of chinoline of a strength of 2 per cent. of water. An antiseptic mouth wash must be used subsequently. This treatment Dr. Bodecker finds cures as much as 70 per cent. of his cases.

MC. AUBEY'S CURE FOR FACIAL NEURALGIA.—A few drops of the following mixture are said to be useful when poured upon the hand and applied to the seat of pain. It is worth the trial, only caution should be used or blistering may result. Alcohol 4 parts ; oil of mustard, 1 part.

Abstracts of British & Foreign Journals.

DEUTSCHE MONATTSCHRIFT FÜR ZAHNHEILKUNDE.

DR. MILLER ON MICRO-ORGANISMS OF TOOTH CARIES.

Dr. Miller, of Berlin, speaking at the Central Union of German Dentists, said, 1st, In every row of teeth are found cavities, spaces, clefts and hollows in which the remains of food are concealed and which cannot be quite got rid of with the utmost cleanliness. 2nd, There are found at the same time in every mouth cavity, cleaving micro-organisms, chiefly due to fermentation. Some of these cleaving micro-organisms possess the capability of sitting up in the food debris in a state of fermentation whilst they turn the carbo-hydrates, particularly sugar, into lactic acid.

This destruction takes place so quickly that in a liter of sweetened calves' broth into which Dr. Miller had put the bacteria of caries, he found twenty-four hours afterwards a gramme of pure lactic acid.

If a mixture of sugar and salina is put to a small piece of a carious tooth in some hours in a normal temperature, it will become very acid on account of the lactic acid.

4. In the places where the acid is formed, the tooth tissue according to the duration of exposure is more or less decalcified.

5. The decalcified tooth tissue is dissolved by the micro-organism, or through a fermentation process which gives rise to them. This can be seen by the following example: if one puts some hay bacilli upon a piece of cooked fowl, it will be dissolved in time and disappear.

If a piece of decalcified tooth is placed in the presence of micro-organism of caries, the tooth tissue will be dissolved, and in time will disappear. In the same way is decalcified tooth tissue through the fermentation acid dissolved and destroyed. We see, therefore, in the process of caries two chief stages: first, the decalcification of the tooth tissue through fermentation acid, chiefly lactic acid; secondly, the solution of the decalcified tissue through the influence of the bacilli, or through a fermentation which dissolves it.

It cannot be denied that there are several substances which are brought into the cavity of the mouth, such as food or medicine which are very injurious to the teeth, and predisposes them to caries. Besides such micro-organisms

which form lactic acid other fermentation micro-organisms are found in the mouth which appear to have no specific influences: first, the *leptothrix buccalis*—a microphyte, the physiology of which is not known; second, the butyric acid microphyte, which is only rarely found in an experiment in which some sweetened saliva was fermented, whilst a quantity of lactic acid was produced; and further there was only a drop of oily fluid perceptible which smelt of butyric acid; third, the acetic acid microphyte—this is seldom found, as the temperature and air are unfavourable to it.

Dr. Miller has not examined so much those micro-organisms which are free in the cavity of the mouth, as those which are found in carious teeth. The methods of effecting a pure culture are well known. Dr. Miller takes from a freshly-extracted carious tooth a little piece of carious tissue, puts it into a drop of sterilized veal broth, and pricks it with a sterilized needle. The micro-organism to be found in the carious tooth tissue go naturally into the broth, and are placed in the usual way in flasks of extract of meat or veal broth, sugar, and gelatine. The transposing from one flask to another is continued till every cleaving kind of micro-organism in the little piece of carious tooth remains in pure cultivation. If this is a success, several gelatine tubes are inoculated with it, and in these tubes they can be preserved many weeks.

As already stated, Dr. Miller has isolated in this way five several kinds of cleaving micro-organisms, and has designated them by the names of the Greek letters α β γ δ ϵ .

The α γ and δ micro-organisms appear in the form of cocci, or diplococci, the growth is a bacillus, and the ϵ β shows several forms of development, such as cocci, bacteria, and bacillus.

These micro-organisms are easily separated from the nutritive gelatine, they possess the power of setting up fermentation in solutions and liberating carbonic oxide. Dr. Miller has only studied this process in the micro-organisms. By means of this organism acting on cane sugar it becomes hydrated. This was then split up into æthylidic lactic acid. The fermentation takes place without access of air, and without a development of carbonic acid. The tooth decalcified by the acid is attacked by the micro-organisms and destroyed.

After obtaining these different kinds of micro-organisms, he tried by their influence to procure artificial caries in healthy mouths. This so far succeeded that microscopically his artificial caries could not be distinguished from the natural caries. He tried the influence of several antiseptics

and filling materials on caries micro-organisms. Of all these antiseptics, iodoform had the greatest effect. Some others, as corrosive sublimate and nitrate of silver solution, are stronger, and can only be used in a weaker solution. Tobacco smoke has a surprising effect on micro-organisms; copper amalgam has a great antiseptic power. Iodoform cement and oxychloride are effectual, but the latter only in a fresh state.

A question of not less importance is, whether and under what circumstances the micro-organisms of the mouth cavity can produce appearances of disease in any other part of the body. It is known that great masses of fermentation micro-organisms can produce great disturbances in the elementary canal. Leyden and Jaffe, James Israel, and others have given their opinion that the micro-organisms of the mouth cavity have the same deleterious influence on other parts of the body as on the teeth. Years ago in America the death of a number of small animals was caused by inoculation of human saliva. Ragnand, Sonnelongue and Pasteur inoculated little dogs with the saliva of a child who died from hydrophobia, and in the course of twenty-four hours they expired. The micro-organisms were of the form of an 8 surrounded by a jelly bag and had been generated in veal broth. It is probable that these micro-organisms had nothing to do with hydrophobia. It has not seldom happened that after the extraction of several teeth infectious diseases have come on (septicæmia and pyæmia not excepted) which have been put down to the dirty hands or instruments of the dentist, but it is more probable that the infection has arisen from micro-organisms existing in the mouth of the patient. Dr. Miller has made two kinds of experiments, first inoculation with pure culture caries micro-organisms, secondly inoculation with saliva.

In the first series two little dogs, five mice, and a rat were treated. They were inoculated with the micro-organisms *a* and *v*, partly in the cavity of the abdomen partly in the lungs. Of the dogs one was attacked after twelve hours. The rat remained huddled together in a corner and would not eat, after twenty-four hours he was seized with violent diarrhœa and thirty hours later he expired. The autopsy showed that the right lobe of the liver was penetrated with micro-organisms, and in the intestines they were also found in great quantities. The two mice were killed in the same way. Four weeks later the second dog died; on opening it several abscesses were found. In the second series five dogs and six mice were inoculated through the lungs. The saliva was taken from the mouth of an anæmic though otherwise healthy woman. Four mice and

two dogs succumbed after thirty six hours and all showed in the blood of the least peculiar cocci and diplo-cocci. The same day the woman in question complained of bad taste in her mouth, and wished to know if a tooth was not the reason. The mouth cavity was perfectly healthy but the tonsils were covered with a thick layer of yellowish white fur in which diplo-cocci could easily be found. Whether the cocci arose from sputum septicæmia or from quite normal circumstances can only be elucidated by experiment, but the proof of such poisonous micro-organism in the human mouth must be of no little significance to the dentist. By the extraction of several teeth they may get into the blood and if there are pre-disposing circumstances present, may cause all kinds of disturbances for which the dentist generally bears the blame.

DEUTSCHE MONATTSCHRIFT.

IDZIKOWSKI'S METHOD.

Idzikowski's plan is to use plates for teeth setting of pink and black caoutchouc combined. Up to this time there have been many attempts to use black and rose-coloured caoutchouc, but there has always been some fault or blemish in them, sometimes the plates have been too thick, sometimes so thin that the black caoutchouc has been too visible in the mouth. Herr Idzikowski has succeeded in preparing a plate, the great excellence of which is that the black caoutchouc lies towards the teeth and is unseen, and the divisions between are always in pink caoutchouc. He explains his method as follows:—I take a plaster model, mark out the size of the plate required and also mark the point which the black caoutchouc may extend. Then I take a small gutta percha plate, about the same thickness as the black caoutchouc will afterwards be. This, however, must only reach to the edge of the gums. A second plate of wax is then laid on, and, after the teeth have been cut, the model is plastered in the usual way. Then the moulding or casting of the wax plate must be prepared in the upper part of the flask. When this is set it will rise. The gutta percha plate is then separated from the wax. Then the upper part of another flask, which must fit exactly into the lower part of the one already in use, is placed ready, and a moulding is prepared in it for the gutta percha plate. When the gutta percha is removed, I stop with black caoutchouc in the usual way, only using less of it. Then the second moulding is pressed, all superfluous black caoutchouc removed, the edges painted with a solution of pink caoutchouc in chloroform, a

thin plate of pink caoutchouc laid on the black plate, and last of all pressed with the first moulding.

The difference of the work between this and former methods is that it takes about a quarter of an hour longer to prepare.

Literary Notices and Selections.

HYDROCHLORATE OF COCAINE, THE NEW LOCAL ANÆSTHETIC.

By J. MORGAN HOWE, M.D.S., M.D., New York.

AT the Ophthalmological Congress recently held in Heidelberg, it was demonstrated that a two per cent. solution of the hydrochlorate of cocaine, dropped into the eye, produced complete local anæsthesia, so that a probe was pressed into the cornea until its surface was indented, and the conjunctiva was rubbed and seized with forceps without producing pain. This condition of the sensory nerves lasted for about fifteen minutes, when sensitiveness began to return, and there resulted no irritation of any kind from the solution. Since the news of this wonderful discovery reached this country, and was published in the *Medical Record* of October 11, medical men have vied with each other in demonstrating the local anæsthetic properties of this drug in operations on the eye and other tissues and organs of the body, especially on mucous surfaces. It is not strange that many dental practitioners here have thought of testing its applicability to dental tissues. The drug has been and is very scarce in this market, but I was able to obtain a small quantity of a two per cent. solution on October 20, with which I began experimenting the next morning, and will detail some of the results.

A young man had a large approximal cavity in a bicuspid; the dentine was sensitive, the patient nervous and afraid of pain. After adjusting the dam and drying, the solution was applied; after ten minutes, tested with an excavator. I thought there was some anæsthetic effect, but the patient would hardly admit it. After five minutes' more trial there were no such decided results as to be very encouraging. In the same mouth an application was made to a partially devitalized pulp in a lower molar, and attempts were made to remove it, but without success, although I felt certain there was a decrease of sensitiveness. From this time experiments were made with rather discouraging results, the patients being nervous and loth to admit favourable results so long as any pain was experienced, and I was careful not to influence

the mind of the subjects. On October 24, however, on applying the solution to a very sensitive cervical cavity in a cuspid, in the mouth of a very intelligent lady, the testimony was decided and positively favourable. Pain was not entirely abolished, but the preparation of the cavity was concluded with much less suffering on the part of the patient than I have ever witnessed in any similar case. My hopes were so far confirmed that I concluded to ask a few professional friends to join me in the experiments. I made applications to several sensitive cavities during the next three days, with some anæsthetic effect in each case, but the results were not very satisfactory. In all cases previous to this time I had allowed the solution to remain, moistening the cavity—while I cut the dentine—with the idea of its continued action. In preparing a very sensitive cavity on October 29, the hoped-for abolition of sensitiveness seemed to be entirely wanting, and while slowly cutting, as I was able to do, the cavity became very dry, and sensitiveness diminished in a marked degree. Afterward, on the same day, a young Miss presented, having deep grooves across the central incisors, from arrest of enamel development, one of them having become so sensitive that she could not brush it without pain. After adjusting the dam the cocaine solution was applied to this groove, and the preparation of another tooth for filling was commenced; but after several applications and the lapse of nearly half an hour, no lessening of sensitiveness was perceptible while it was moist with the solution, but when I allowed it to become perfectly dry, all sensation disappeared when it was touched or rubbed with an excavator. A few days afterward this young Miss informed me that the anæsthetic effect on the dentine lasted through the whole evening, so that she could rub the groove with her nail without sensation; but the next morning it was as sensitive as ever. At this time, and at a subsequent sitting of the same patient, in cavities in molars, I failed entirely to get any decidedly favourable results from the cocaine solution, either while the cavity was wet or dry. Another case presented similar peculiarities—that of a young lady with a cervical buccal cavity in the second superior bicuspid, which was exquisitely sensitive. The solution had very marked anæsthetic effect, so that the preparation of the cavity caused almost no pain. On a later day, for the same patient, the same application was made to approximal cavities in molars with very little apparent effect. An application to exposed cémentum, on the labial surface of a cuspid, where no decay existed, was quite successful in relieving all sensitiveness for the time.

In a letter to me dated November 6, 1884, Dr. G. S. Perry says of the solution of cocaine salt :

"On October 27, the day on which you handed to me the hydrochlorate of cocaine, I used it for the excavation of sensitive dentine for four patients. It was successful in each case—markedly so in one case, that of a physician who came begging me to delay operating upon a left superior bicuspid until he or I could get for trial some of the new local anæsthetic. He was delighted when I told him that I had a few drops of the medicine, and would try it at once. The cavity reached very near the pulp, and was very sensitive. It had been painful more or less for some days, and he shrank from any disturbance of it. After applying a drop of the medicine and waiting a few moments, I was able to excavate the cavity very thoroughly without causing him pain. He said it felt as if I was cutting upon a dead tooth. The tooth was filled with oxyphosphate of zinc, and he left the office a firm believer in the new anæsthetic. I saw him yesterday, and he reported the tooth in every way comfortable. The other three cases were those of cavities of marked sensitiveness, and in each one there was almost entire freedom from pain in excavating after the medicine had been applied for a few minutes.

The next morning I had an opportunity of applying it to the extremities of the pulp in the roots of a superior left molar. The bulbous portion of the pulp had been devitalised and removed, but there was persistent vitality at the extremities of the roots. The medicine was applied, and after a few moments it was possible to pass the broach beyond the points in the canals where pain was felt at first. By persistent effort very small portions of the pulp were drawn out, until finally the broach was distinctly felt to reach the closed end of the roots. There was some bleeding, which ceased soon after the canals were cleaned by shreds of cotton rolled upon the broach. There was practically no pain during this operation.

"My next case was that of a lady who desired crowns placed upon the roots of the two superior centrals. The pulps were not exposed, but the teeth were very badly decayed and very much broken down, so that fillings of any kind would have been only a source of distressing deformity and I was quite ready to accede to the lady's wish. I determined at once to try the medicine. The dam was applied, and after the softened, discoloured dentine was removed and sensitive places reached, the medicine was applied and the patient directed to tell me when pain was felt in excavating.

Sharp, spoon-shaped excavators were used, and the dentine was cut away in one cavity and then the other until sensitive places were reached, when the medicine was again applied. This was repeated until the pulps were exposed. After this more rapid progress was made as the soft pulp-tissue seemed to come more readily under the influence of the medicine. In the left central a pulp-stone was encountered and removed. This pulp bled more freely, and after the nodule was removed the pulp yielded more readily and was removed first. The pulp in the other one required more of the medicine, and considerably more time was consumed in its removal. In cutting through the dentine, when pain was felt the medicine was applied, and the other tooth was operated upon. The pulps were teased out little by little with delicate piano-wire broaches, made with delicate hooks on the ends. Considerable bleeding was encountered, and this seemed a hindrance, as it diluted the medicine—which you informed me was only a two per cent. solution. The closed extremities of the roots were reached, and the canals well swabbed out with shreds of cotton, which were rolled on the broaches and rotated in the canals to entangle and remove the torn parts of the pulp, in one hour and fifteen minutes from the time the patient took the chair. During this operation no pain worthy of the name was felt by the patient. She said that the putting on of the dam with the floss silk hurt more than any other part of the operation. There was no chance for the imagination of the patient to have a bearing on the case for she did not know what I was doing until the pulps were laid bare and pulp-stone removed. Then, being impressed with the remarkable power of the medicine, I called my associate, Dr. Wm. Woodward, into the room, and, in explaining to him what I had done, she became aware for the first time of the exposed condition of the pulps of her teeth. When she left my office there was no trace of vitality in the canals of either of the teeth. The broach could be passed up to the closed ends of each of the roots, the canals seemed to be entirely clean, and the bleeding had about ceased. When she came back the next day, at the extreme ends of each of the roots there was a little sensibility and a little trace of fresh blood after exploring with the broach. There was no doubt in my mind but that there was a very little of the extreme ends of the pulps left in the roots, and that these had regained sensibility after the influence of the medicine had passed away. Another application of the medicine enabled me in a few moments to remove all that was left, so that the next day after this when she called there was no trace of

vitality. The teeth are now filled with wax and gutta-percha, waiting until I can get time to complete the operations upon them. I saw them to-day, and they are, and have been from the first, perfectly comfortable.

Such unvaried success with the medicine gave me great confidence in its power, so that I was quite unprepared for the failure which followed its use the same afternoon. A young lady for whom I used it in excavating several cavities in the incisors, insisted that it did no good whatever. I have also used it several times since in cases where it seemed that no effect was produced upon sensitive dentine. In one case I had no success with it until the cavity had been thoroughly dried with hot air. Then I cut quite freely without pain.

"I have been greatly interested in the testimony of patients after its use. One lady said it gave her tooth a dreamy, far-away feeling. Another said it gave her tooth a strange, numb feeling like that of a stiff joint that was regaining use and sensibility. I have used it several times when it seemed to operate upon the softened dentine, but was inoperative when the dense structure of the tooth was reached. Its variable action has greatly puzzled me. I am at loss to account for such undoubted anæsthetic effects in some cases and the absence of such effects under seemingly similar conditions in others. But the facts which I have related have impressed me with the belief that this new remedy will play an important part in our list of dental remedies. One must trust the evidence of their own senses, and I have seen enough of its effects to satisfy me that it is a remedy that should receive our most earnest attention. I congratulate you, my dear fellow, upon probably being the first to use it upon the teeth.

Dr. C. F. Ives reports:

"My successes and failures are about equal. I find thus far that it works most effectively in teeth above mediocrity in quality, and in patients over twelve years of age. In younger patients with soft white teeth, I have had no success whatever. I had great hopes that it would be useful in removing the pulps from teeth after the application of arsenic, but thus far it has not been successful. I find that the employment of warm air in the cavity is of great assistance."

Dr. E. T. Payne, in a letter dated November 6, says:

"Having used it in numerous cases, my successes encourage the belief that the drug will be found of great service in our profession. I will detail two cases. Dr. S., of this city, called to get relief from a twelfth year molar, in which the pulp was nearly exposed. After adjusting the rubber-dam

and removing the accumulation in the cavity, I found the dentine extremely sensitive. The doctor told me he had used the cocaine successfully in the removal of hypertrophy in the nostril, and inquired if my attention had been called to it. It was my intention to use it without his knowledge, but as that was no longer possible, I did it with his consent. On a piece of spunk I carried enough of the two per cent. solution to the cavity to flood it, and allowed it to remain ten minutes; then drying the cavity, I prepared it to my full satisfaction without his flinching in the least. The cavity was filled with gutta percha after wiping it with creasote. There has been no appearance of trouble since, although the pulp was nearly exposed.

"Another interesting success was that of a young lady for whom I had occasion to fill a lateral incisor. After adjusting the rubber-dam, I found a cavity with very sensitive dentine. In order to get exact data, I prepared one part of the cavity before using the cocaine; then, with a piece of cotton I saturated the cavity, and, pretending to be obliged to be excused, I left the patient ten minutes. On my return I dried the cavity and continued the preparation, without the demonstrations which characterized the first part of the cleaning and shaping. This I consider a fair test, for the reason that the patient did not know that a drug of any kind was used.

"Some failures and some comparative failures induce the belief that the two per cent. solution will not prove of great benefit except in cases where there is great vascularity. With a concentrated preparation, I have bright hopes, in most cases where a local anæsthetic is desirable."

Since the receipt of this interesting though variable testimony as the value of the very weak solution of cocaine salt, Dr. Ives obtained what was represented to be a four per cent. solution, and some of a ten per cent. solution, which he kindly shared with me. A few trials with these preparations seemed to indicate that they were no more certain in their action than the weaker solution, but these latter were prepared here from the coca leaves, or fluid extract, and I suspect that the attempt to isolate the alkaloid was only partly successful, and that the drug was unreliable. Merk's alkaleid is nearly white, and the crystals of the salt make a colourless solution. There are two salient points in the record of these experiments to which I will call attention.

First, there were many instances in which almost complete loss of sensitiveness in dentine was produced, and the removal of two living pulps without pain by Dr. Perry is no

less remarkable than any of the operations that have been performed on the eye. The lady for whom this was done called on me and told me in effect what Dr. Perry has written.

Second, in several instances in which the dentine seemed as sensitive as ever while wet with the solution, almost complete anæsthesia was obtained by drying the cavity thoroughly. I have strong hope that when a reliable stronger solution can be obtained the remarkable variations in results will disappear; but we have much to learn about this wonderful drug. One phenomenon has occurred which it will be well to note—after about two weeks a fungus growth appeared in my solution, which as time passed, seemed to destroy the efficacy of the drug.—*Dental Cosmos*.

Dental News.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.
ORDINARY MONTHLY MEETING, held Monday, Dec. 1st, 1884.
J. S. TURNER, M.R.C.S., L.D.S., Eng., President in the Chair.

The minutes of the previous meeting having been read and confirmed,

Mr. Edward Bartlett signed the Obligation Book, and was formally admitted to membership by the President.

The President announced that Mr. Gordon Hooper, of 112, Harley Street, Cavendish Square, had been duly nominated, and would be balloted for at a subsequent meeting,

The Curator (Mr. Hutchinson) announced that, with the sanction of the Council, he had purchased for the Society's Museum the skull and almost the entire skeleton of a gorilla. As this animal was so difficult to obtain, the specimen was very valuable. The Museum had previously contained only a cast of the gorilla's skull.

He also presented, as a donation from himself, portions of the jaws of two Australian marsupials, viz., the wombat (*Phascolomys fuscus*) and the dog-faced opossum (*Thylacinus cynocephalus*).

Mr. Storer Bennett said the skull to which Mr. Hutchinson had just called attention was a very fine one, and was the more valuable because it presented some pathological features. The animal had evidently met with some injury to the mouth and neck, since the hyoid bone had been fractured and reunited by a mass of callus. The jaws also showed evidence of the effects of violence, for one of the incisor teeth had

been knocked out, and another broken off; the alveolus of the first had been absorbed. In looking at the skull no one could fail to notice the immense size of the jaws and teeth, with the large diastoma in front of the canines, the receding face, closely-set orbits, and prominent eyebrows. The brain cavity was small, and the foramen magnum was set far back, but the zygomata, and all the ridges and prominences for the insertion of muscles were very largely developed.

The President said it was certainly a most interesting addition to the Society's Museum. They had been fortunate enough to secure almost a complete skeleton, and when it was set up Mr. Charlesworth proposed to place some human bones by the side of it to show the difference.

The President then called upon the members to select two gentlemen to audit the Treasurer's accounts for the year now drawing to a close. Messrs. Walter Coffin and J. F. Corbett were accordingly chosen, and agreed to undertake this duty. Mr. G. C. McAdam, of Hereford, then described a simple but effectual contrivance for the regulation of teeth, which had proved of great service to him in his own practice, and which, although not actually new, for he had found it mentioned by Dr. Farrar as having been suggested to him by Dr. Shepherd, might possibly be new to many members. The apparatus consisted of a thin circular gold band securely fixed to the crown of the tooth by means of phosphate of zinc cement. The method of applying the band was as follows;—first clean the tooth thoroughly with soap and fine pumice powder, then adjust the rubber dam and wipe the tooth over with choloform, to secure freedom from grease, and to obtain perfect dryness. The band having been previously made and fitted, phosphate of zinc cement mixed to a creamy consistence, was applied to the inside, which should be slightly roughened; the band was then pressed well home on the tooth, held in position until the cement had set, and the superfluous cement then trimmed. The many uses to which this plan could be adapted would readily suggest themselves. Thus by means of lugs, hooks, or studs, soldered to the band in any position acquired, traction could be exerted on any point, and an incisor could thus be readily moved or rotated.

It obviated the risk of elastic bands or silk ligatures slipping up under the gum.

The band could be fixed on canine crowns when only half erupted.

By means of a short tube soldered to the band, a socket is formed for the retention of the point of a screw jack.

It was also very useful in fixing a replanted tooth; bands

being placed on the loose tooth and on those on either side of it, by means of studs attached to them, the replanted tooth could be lashed firmly in place.

Lastly, its immobility and cleanliness were great recommendations.

Mr. Walter Coffin said he had long been aware that gold bands attached to the necks of teeth by pyrophosphate of zinc had been occasionally used in regulation cases. It was a somewhat troublesome process, drying the tooth and fitting and fixing the band, but in cases where the tooth was round, or nearly so, the plan might be useful.

Mr. W. E. Harding (Shrewsbury) said he had occasionally made use of this plan for rotating teeth, and had found it answer very satisfactorily. He had not, however, found it necessary to apply the rubber dam and adopt all the other precautions mentioned by Mr. McAdam. He simply wiped and dried the tooth as well as he could before applying the band, and he found no difficulty in getting it securely fixed.

Mr. Walter Coffin showed a photograph of a Russian boy, fourteen years of age, who was probably the most hairy member of the human race. As seen in the photograph his face reminded one strongly of a Scotch terrier, being almost entirely covered, as well as his body, with long, shaggy hair. He was the last survivor of the "Kostroma Family," so called from the Russian province of which they were natives, several members of which exhibited the same peculiarity. Mr. Coffin had examined several times during the last ten years. When first seen, at five years of age, he had no teeth, and at the present time he was not much better off, having only two canines in the upper jaw and three incisors in the lower, all temporary teeth. His father and a brother were similarly affected with "hypertrichosis universalis"; the former died in 1881, aged fifty-nine; the latter died young about eight years ago.

(To be concluded).

STUDENTS SOCIETY OF THE DENTAL HOSPITAL OF LONDON.

ORDINARY GENERAL MEETING, held December 8th, 1884.
C. TRUMAN, Esq., M.A., M.R.C.S., President in the Chair.

The minutes of the previous meeting were read and confirmed.

The following gentlemen were proposed as members of the Society by Mr. Campion and seconded by Mr. Gabriel, viz., Messrs. G. H. Gill, H. Williams, H. J. Moore, N. Petit, F. M. Ludbrook and A. F. Thomson.

Casual communications.—The President very clearly explained a case of "Syphilitic Perforation of the Palate," sent to him at St. Thomas's Hospital, for the purpose of having an obturator made. On examination two perforations were found in the median line, distinct from each other, *i.e.*, one in the hard, the other in the soft palate. The peculiarity of this case was, that the free edges of the soft palate had united with the superior constrictor muscle at the top of the pharynx, and the only communication between the back of the nose and the pharynx was through the perforation in the median line of the soft palate, and observed that Mr. Kingsley, in his work on "Oral Deformities," mentions a case of union of the palate and pharynx, but in this there was no communication between the nose and pharynx.

Mr. Marcus Davis next brought forward a case of scaly eruption consequent on reflex dental irritation, which occurred in the person of a young girl aged about 16 years, who came to him to have two small cavities in the upper 1st molars attended to, these cavities were about the size of the bore in a tube tooth. The patient had previously consulted a medical man about her face, but with no very satisfactory result. Her cheeks had a very peculiar tense appearance with very small, red, scaly-edged pimples. Upon examination the dentine of the tooth was extremely sensitive, and the cheek of the side operated upon became a very red colour. After succeeding by the aid of an escharotic, in preparing the cavity, an oxychloride was inserted, and in three or four days after, the eruption disappeared. About twelve months after, the patient, according to arrangement, came to have the white filling replaced with gold. Her face was then in the condition as when first seen, again examining the teeth two more cavities were discovered, these received the same treatment as the previous ones, and with the same successful result.

Mr. Sjoberg then introduced to the meeting an elderly patient who had been operated on for rodent ulcer, and for whom he had ingeniously adapted to a pair of spectacles, a piece of vulcanite, coloured very flesh-like in appearance, and to which was attached a moustache, this was so arranged that when the spectacles were placed in position the whole contrivance successfully covered up the lost portion of the face, and gave to it a very presentable appearance. Mr. Sjoberg had also supplied to the patient an artificial denture.

The President next called on Mr. C. R. Smith, to read his paper on "Regulation Plates." The paper proved an eminently successful one, for through the kindness of Dr.

Walker, Mr. Smith was enabled to illustrate his diagrams with the lime light. At the finish a lengthy discussion followed, in which the following gentlemen took part: The President, Dr. Walker, Messrs. Robbins, Sjöberg, Marcus Davis, Sexton, Lloyd Williams, Buckland, Hooper, Paterson, Gabriel, Goodby and Campion.

At the close of the discussion Mr. Smith replied.

A cordial vote of thanks was proposed by the President and seconded by Mr. Stainer, to Mr. Smith for his paper, also to Dr. Walker and Mr. Goodby for their aid.

The President then informed those present that the next meeting would take place on the 19th of January, 1885.

ODONTO-CHIRURGICAL SOCIETY OF SCOTLAND.

The second ordinary meeting of the Session 1884-85 was held on December 11th, at the Rooms, 30 Chambers Street—Andrew Wilson, Esq., L.D.S., Ed., President in the chair.

The minutes of the previous meeting were read and approved.

Mr. James Graham Munro, L.D.S., Ed., Edinburgh, was nominated for membership, and Mr. Arthur Baines, L.D.S.I., Hanley, balloted for and admitted as a member of the Society.

In the absence of the Curator, the Secretary announced the donation to the Society's Museum by Mr. David Hepburn, L.D.S., Eng., Edinburgh, of an apparatus for the administration of ether, in use many years ago, the patent being dated 1847. Also from Mr. C. J. Boyd Wallis, L.D.S., Eng., London, of three models illustrating the treatment of a case of epulis by electrolysis.

On the motion of the President, a unanimous vote of thanks was accorded to the donors, and the Secretary instructed to communicate the same to them.

The President then called upon the Secretary to read Mr. Wallis' communication regarding the history of the case which the models illustrated.

EPULIS TREATED BY ELECTROLYSIS.

Mrs. —, æt about 50, Epulis of the upper jaw over the sites of the right second molar and wisdom teeth, which had been extracted some two years previously. The tumour began to form, with the appearance of a gumboil, some time before the removal of the wisdom tooth. When first under observation the saliva flowed freely, and there was a tender swelling at the angle of the jaw and down the side of the neck, with occasional stabbing pains. The general health was not good. The tumour overlaid the hard palate, but

was not adherent to it; it was somewhat soft and of a livid red colour, and bled freely on puncture. This tumour was a second growth, the previous one having been removed with the knife. In consultation with my friend Dr. M'Oscar, treatment of the tumour by electrolysis was decided upon, and with this in view I constructed some needles of platinum wire which were inserted into copper wire and gold soldered, then arranged in a boxwood handle with a "make and break," arrangement for the current. Several needles were at first employed, and the electrolysis was continued at intervals for a period of about six months. But little trace of the tumour was to be seen at the completion of the treatment, a small mass of indurated cicatricial tissue alone marked the spot, and this in no way interfered with the adaptation of artificial teeth.

[The discussion on Dr. Norman Kingsley's paper will appear in our next issue].

APPOINTMENT

Mr. Edward Latchmore, L.D.S.E., has been appointed Demonstrator to the Dental Hospital of London, *vice* John Ackery, M.R.C.S., L.D.S., resigned.

MONTHLY REPORT OF CASES TREATED AT THE DENTAL HOSPITAL OF LONDON.

FROM NOVEMBER 1st TO NOVEMBER 30th.		
Extractions	{ Children under 14	400
"	{ Adults	794
"	{ Under Nitrous Oxide	562
Gold Stoppings	. . . . .	208
White Foil ditto	. . . . .	18
Plastic ditto	. . . . .	750
Irregularities of the Teeth	. . . . .	149
Miscellaneous Cases	. . . . .	431
Advice	. . . . .	140
TOTAL		3452

S. C. BUCKLAND, House Surgeon.

DENTAL HOSPITAL REPORTS. NATIONAL DENTAL HOSPITAL.

MONTHLY STATEMENT OF OPERATIONS FROM NOV. 1st. TO NOV. 30th.

Number of patients attended	. . . . .	1522
Extractions	{ Children under 14	360
"	{ Adults	1041
"	{ Under Nitrous Oxide	416
Gold stoppings	. . . . .	60
Sheets of Gold used independent of Pellets		
Other Stoppings	. . . . .	500
Advice and Scaling	. . . . .	230
Irregularities of the Teeth	. . . . .	153
Miscellaneous	. . . . .	135
TOTAL		2895

ISIDORE FREDERICK PRAGER, House Surgeon.

British Journal of Dental Science.

No. 408. LONDON, JANUARY 15, 1885. VOL. XXVIII.

COMPARATIVE DENTAL PATHOLOGY.*

By J. BLAND SUTTON, F.R.C.S., Eng.

Lecturer on Comparative Anatomy, and Senior Demonstrator of
Middlesex Hospital Medical College.

(Concluded from page 13).

CLEFT PALATE.

It has long been known that animals, other than man, suffer from the deformity known as cleft palate. The Teratological Series in the Museum of the College of Surgeons, London, contains some examples derived from calves, dogs, and lions. In the case of the calves the cleft is situated between the maxillary bones, but does not extend sufficiently far forward to involve the premaxillæ.

The case of the young lion is of sufficient interest to warrant a few details.

The specimen is thus described in the catalogue; "The head of a young lion, born in the Zoological Gardens, March, 1862, with a cleft palate and arrested growth of the septum narium. The litter consisted of two, this and another in the same condition. The alveoli of both jaws are arrested also. Several other lion cubs born in the Gardens have been similarly affected."

The probable cause of this arrest of development is a very interesting and important one. At the time these lions were born it was customary to feed the larger carnivora on horse-flesh alone. Later, it was deemed advisable to vary their food by treating them to a little goat's flesh occasionally, for it was found that the bones of horses were too tough and resisting for even the strong jaws of a lion or tiger, whereas the bones of goats are smaller, less dense, and are in consequence more easily crushed, and enable the beast to obtain a greater quantity of earthy phosphates into the system. The

* A Paper read before the Odontological Society of Great Britain.

result has been that since this mode of feeding was adopted cleft palate has not been observed in the young of lions and tigers born in the Gardens.

The history of these cases clearly show that anything tending to prevent the proper assimilation of lime salts by the mother may produce cleft palate in the offspring. May not too great a demand of lime salts produce a similar effect? The following is a case in point:—

A Scotch terrier bitch, six years of age, had had some six or seven litters of young ones when, to the owner's surprise, she was delivered of four little ones all of which had clefts in their palates. It was suggested in explanation, that when pregnant she had been frightened by a parrot kept in the house, and to whom the animal had the greatest aversion, for the parrot used to fly at the bitch with open mouth, and show the deficiency in the hard palate normal to birds in general. Of course no one pays heed to such stories as these. As was to be expected, the pups, unable to suck, died within a few hours of their birth. Since that defective litter the bitch in question has been delivered of several litters of pups, all of which possessed defective palates. The explanation seems to be this:—The animal had been exhausted by frequent pregnancies, and the demand made on her system, first to produce these young, and afterwards to nurse them, had drained her store of lime salts, in consequence of which sufficient earthy matter could not be produced to complete the skeletons of her progenies properly: cleft palate was the result. How far these causes may operate in producing cleft palate in man is a subject worthy of inquiry. So far as I have had opportunity of seeing cases, the above view has been borne out thoroughly.

The subject of cleft palate in man and animals has been made the subject of some interesting and careful observations by Professor Paul Albrecht, of Brussels. This anatomist endeavours to show by reference to cases of cleft palate, that the pre-maxillary bone is developed from two centres. In those cases in which the cleft is complete it may pass through the premaxillary bone in such a manner that the median portion supports the central incisor, whilst the outer piece supports the lateral incisor, the corresponding maxillo-pre-

maxillary suture remaining intact. It has usually been maintained that the cleft passes out through the maxillo-premaxillary suture.

Professor Albrecht proceeds even farther, and adduces the following interesting facts :—In some cases where the cleft in the palate is double, so as to isolate the inner portion of the premaxillary bones and leave them jutting forwards on the end of the vomer, the median piece may develop two incisor teeth in each half, and yet an incisor tooth may be found lodged in a socket and separated by the maxillo-premaxillary suture from the canine. Arguing from this, Prof. Albrecht endeavours to show that, phylogenetically, man inherits three incisors on each side, but that in the course of development the middle one of the three on either side is suppressed. In those cases of cleft palate with an enlarged median portion, Prof. Albrecht points out that there is a greater blood supply than usual, and that the extra nourishment enables the usually suppressed second incisor to proceed to full development, and show that the so-called second incisor is actually the third.

The question of the duplicity of the premaxillary bone is to me one of extreme interest, and as for some long time past I have been engaged in investigating the development of the facial bones, no time was lost in looking into the question, with the following result :—After the most careful search I have been unable to assure myself of the duplicity of the centres for each incisive bone. That in certain cases of malformation the cleft does pass between the incisor teeth and miss the maxillo-premaxillary suture is unquestionable, for Prof. Albrecht fortifies his argument by drawings and references beyond all doubt.

But too great a protest cannot be raised against a practice now getting very prevalent—of drawing conclusions as to morphology from pathological specimens; nothing could be more fallacious. For example, the bodies of the vertebræ are developed from one primary centre in the normal spine; yet in certain abnormal conditions, especially in *spina bifida* and the like, it is not uncommon to find the vertebral centre split in twain in many parts of the column, or in places to find only half a vertebra developed; this may take place in several

parts of the spine in one individual. My view is, that, normally, the premaxillary bone is developed from one centre, but that in some cases of cleft palate it may arise from two centres. The question of course arises, If each premaxillary bone does not originate from two discrete centres, how may its bifid condition in cases of cleft palate be explained? The solution of the problem seems to be this:—The premaxillary bone is originally developed in membrane, and at some little distance from the median line, which in the foetus is occupied by the thick cartilage known as the ethmo-vomerine plate. After a time the premaxillary ossifications involve the anterior extremity of this cartilage, so that the inner portion of these bones are really of cartilage origin. If any interference takes place to prevent the premaxillary bone or bones meeting the ethmo-vomerine plate, the tip of this cartilage ossifies on its own account.

This condition is easily seen in the human foetus, and is most obvious in the skull of a colt at birth. The examination of a very great number of foetuses has persuaded me that normally *each premaxillary bone arises from one centre only.*

With regard to the question of the second or suppressed incisor tooth, it is one of very great interest to those engaged in investigating the teeth; it may indicate an additional interest to cases of supernumerary incisors. All interested in the question should refer to Dr. Albrecht's admirable paper in "Trans. Société d'Anthropologie de Bruxelles," October, 1882.

The Museum of the Middlesex Hospital contains among its series of casts two models of cleft palates showing distinctly that the cleft passes between the two left incisors, and not through the maxillo-premaxillary suture.

Through the courtesy of Mr. Jonathan Hutchinson, jun., I had the good fortune to examine two other cases of cleft palate in the wards of the London Hospital. The first case is that of a little girl with a complete cleft in the hard palate, which passes out between the left incisor teeth, exactly as in Albrecht's figures. The other is a lad aged twenty. On the right side he has three incisor teeth, and on the left side three incisors; but the second and third are separated by a very thin fissure. This is also an excellent example, con-

firmatory of Albrecht's statement. The case has been submitted to operation.

Mr. W. B. Macleod has been kind enough to send me a very instructive cast from a case which occurred in Edinburgh. It shows beyond all question that in this patient the cleft passed between the right central and lateral incisor teeth. This observer also intends, I believe, shortly to publish a series of cases which he has collected, illustrative of the question as to the true position of the cleft.

Magitot, in his well-known "*Traité des Anomalies du Système Dentaire*," refers to many examples of the occurrence of supernumerary incisors in man, and the Museum of this Society also possesses examples of this abnormality in the number of these teeth.

HYPERTROPHIED BIRDS' BEAKS.

Though scarcely coming under the category of teeth, there are one or two facts about birds' beaks which may be worth mentioning.

It is well known that the beaks of many birds, especially those of parrots, undergo hypertrophy after they have lived for some time in captivity. Many years ago, Otto, in his "*Compendium of Human and Comparative Pathology*," 1831, made mention of, and gave reference to, several interesting examples illustrative of this condition.

Dr. O. Darcher has published a somewhat lengthy "*Mémoire sur les Difformités du Bec chez le Oiseaux*," in which he details several instances in which the beaks of birds of various species have enlarged considerably beyond normal dimensions. So far as my own observations go, I find that parrots and birds of the peacock tribe suffer most. Both mandibles seem equally liable to increase in width, but the upper one is much more liable to be affected in the matter of length.

It is interesting to note that in abnormal elongation of the mandible the upper is always affected to a greater degree than the lower. The reason would seem to be this. When the parts grow abnormally long they tend, like the incisors of rodents, to describe a circle; by this means the edge of the lower beak works against the inner surface of the upper beak and is thus kept within normal bounds.

This paper must now be brought to a close. But, as material is abundant. I hope before long to bring some further researches in "Comparative Dental Pathology" under the notice of this Society.

DISCUSSION UPON COMPARATIVE DENTAL PATHOLOGY.*

The President said Mr. Sutton had on several previous occasions read very interesting papers before the Society, but it was evident that he had not yet exhausted his subjects, for the paper they had just heard was as full of instructive matter and presented as many interesting points for discussion, as any of the others. He quite agreed with Mr. Sutton that it was not wise to rely too much on pathological conditions as a foundation for theories on the subject of normal anatomical or physiological processes. One of the most interesting points in the paper was Mr. Sutton's suggestion as to the causes of cleft palate, and it was the more so because it was probable that the same causes which thus led to an imperfect maxilla in the offspring might also produce defective teeth.

Mr. Charles White asked whether it had ever been ascertained why the tusks of animals always showed a tendency to form a curve? Was it due to the same which produced the curly hair of the negro? In that case the bulbs were curved, and so the hair was developed in a curved direction.

Mr. Gaddes remarked that Mr. Sutton's paper was evidently the outcome of much patient inquiry, and he assuredly deserved the best thanks of the Society for the time and labour he had bestowed on the investigation of a subject which was so interesting to them. He might mention that there was in the Museum of the National Dental Hospital the lower jaw of a kangaroo which showed that some injury had been done to the persistent pulp of one of the lower incisors, and an abscess had followed with results very similar to those which existed in one of the cases mentioned by Mr. Sutton. With reference to what had been said about the curved tusks of animals, it was evident that this was a useful provision of nature, the curve lessening the shock on the socket, and protecting the

* A paper read by Mr. John Bland Sutton before the Odontological Society of Great Britain.

pulp from the effects of violent impact. The long straight tusk of the narwhal was a notable exception, but in this case the same end was attained in another way ; for it had a spiral or screw-like twist, and it was well known that force applied to the head of a screw was not transmitted directly to the point, but was to a great extent lost in a direction at a right angle to the axis. Lastly, he would remark that the case of the marmoset described by Mr. Sutton appeared to resemble very closely the disease known in the human subject by the name of *pyorrhæa alveolaris*.

Mr. Storer Bennett said he regretted very much that Mr. Oakley Coles was not present. He had studied the subject of cleft palate thoroughly, and would probably have been able to give some valuable information with reference to the points touched upon by Mr. Sutton. He himself could not help thinking it odd that if three incisors were normal in the upper jaw, no trace of the extra teeth should ever be found in the lower. The usual statement with regard to the tusks of animals being curved was that mentioned by Mr. Gaddes, viz., that they were so in order to protect the pulp from injury, and the idea was by no means a new one. Mr. Sutton had compared the change in the direction of the tusks of some animals which was caused by their rubbing them against the wall of their cage, to the treatment of irregularities by the dental practitioner, by means of the pressure of a plate. But the cases were not exactly parallel. In the one case the socket was larger than the tooth, and the tooth was twisted in its socket. In the other, the pressure caused by absorption of the bony wall of the socket at one point, and then a redeposit of bone took place at another. Some of the other morbid conditions mentioned by him did, however, very closely resemble what was met with in the human subject. Thus in gouty people it was not uncommon for sound teeth to be lost owing to absorption of their alveoli. The peculiar white softening of teeth which he mentioned was also sometimes met with, especially in persons who had suffered from some exhausting disease, and it was found that if the disease did not last very long redeposition of salts might take place.

Mr. Sutton, in reply, said that the so-called explanation of

why the tusks of animals were curved had first been offered by Professor Owen. But although it pointed out one of the purposes served by this particular shape, it did not really explain how it was that the teeth became so, and he (Mr. Sutton) could not offer any satisfactory explanation. Curved teeth and curled hair, however, were not analogous. The morbid condition of the teeth which he had described in the case of the marmoset was very common amongst animals which were kept in captivity, far more so than that characterised by the presence of tartar.

He thanked the President for the kind way in which he had spoken of himself and his papers, and he begged to offer for the benefit of the Museum, if the Society would accept them, all the specimens he had brought with him that evening to illustrate his paper. He wished in this way to make some return for the liberality the Society had shown in the illustration of his papers.

The President said he thanked Mr. Sutton most heartily in the name of the Society for his valuable donation, and also for his very interesting paper. A paper from him annually seemed to have become a sort of institution, and he hoped it would continue to be so. Their thanks were also due to Messrs. McAdam, Coffin, Oakly Coles, and especially to Dr. St. George Elliott for another valuable addition to the Museum. He had only in conclusion to remind the members that the Annual Meeting would take place on January 12th, when, in addition to the usual business of that meeting, Mr. Storer Bennett would read a paper on "The Herbst Method of Gold-filling."

CHROMIC ACID IN AFFECTIONS OF THE MOUTH.—Dr. Cauquil, writing to the *Bulletin General de Therapeutique*, concerning the employment of chromic acid, as recommended by Dr. Butlin in diseases of the tongue, states that he has also found it of value in stomatitis. He has used it with success in mercurial sore mouth, in the strength of one to five. In other cases of syphilitic pharyngitis, with hypertrophy of the tonsils, he has obtained good results with the same solution.

DISCUSSION UPON DR. KINGSLEY'S PAPER
UPON IRREGULARITIES.*

The Secretary, on behalf of Mr. Matthew, who was unavoidably absent, exhibited two series of models illustrating the treatment of regulating cases mainly through the agency of the frame known as Coffin's split plate. The one in which an outstanding lateral was brought into line, in an already well-filled jaw, with remarkable success; and the other, where a narrow arch associated with very marked irregularities, both in the position and direction of the teeth, had been, after a year's treatment, reduced to a condition very closely bordering upon regularity—but as the patient was still under treatment, a still more favourable result might be looked for. The latter case was the occasion of considerable comment, as the difficulties in undertaking it were great, and the results very gratifying.

Mr. E. A. Cormack said—In Dr. Kingsley's paper we find the following: "As a general statement, the finer the nervous organisation, the more precocious or brilliant the intellect, the greater will be the tendency to dental deformity; the converse is true of feeble-minded people, who, having a fair physique, will show well-rounded jaws and regular dental arches—the exceptions to the latter statement are found among those cases of hopeless idiocy where the whole organisation as well as the intellect is depraved."

Dr. Kingsley has long held this theory and seeks to prove it, by comparative examination of the jaws of the ancients and uncivilised moderns with those of people now living or lately dead.

Regarding this argument, he quotes from Messrs. Cartwright and Coleman, who examined 200 ancient skulls at Hythe Church, Kent. Messrs. Cartwright and Coleman found the dental arch in those skulls remarkable for its regularity, only two slight deviations being found, and in no single instance was there anything seen approaching the contracted arch. The average width was $2\frac{1}{2}$ in., or $2\frac{7}{8}$.

In 1869 Mr. Mummery examined 3000 skulls of ancient races and uncivilised moderns; the average width of ancient races was a trifle less than $2\frac{3}{8}$ in., of uncivilised moderns a

* A Discussion held before the Odonto-Chirurgical Society of Scotland.

trifle above $2\frac{1}{8}$. Of the latter the highest average were to be found among the New Zealanders. Feejee Islanders and Ashantees $2\frac{5}{8}$; lowest average belonging to Hottentots and Bushmen, $2\frac{1}{8}$. The average width of the civilised modern arch is a trifle above $2\frac{1}{8}$ in.

Thus we see that between ancient and modern dental arches there is a slight contraction, and that, with the modern savage, the more intelligent races have greater width than those of such degraded tribes as the Hottentots and Bushmen.

Let us glance briefly at the causes which bring about this modern contraction among our semi-human forefathers (*Descent of Man*, Ch. ii., p. 53) "the free use of the arms and hands, partly the cause and partly the result of man's erect position, appears to lead in an indirect manner to other modifications of structure. The early male forefathers of man were, as previously stated, probably furnished with great canine teeth—which served them as formidable weapons—; but as they gradually acquired the habit of using stones, clubs, or other weapons, for fighting with their enemies or rivals, they would use their jaws less and less. In this case, the jaws, together with the teeth, would become reduced in size, as we may feel almost certain from innumerable analogous cases."

Again (*Descent of Man*, p. 1. C. ii., p. 3) "It is asserted that the hands of English labourers are at birth larger than those of the gentry. From the correlation which exists, at least, in some cases, between the development of the extremities and of the jaws, it is possible that in those classes, which do not labour much with their hands and feet, the jaws would be reduced in size from this cause that they are generally smaller in refined and civilised men than in hardworking men or savages, is certain, but with savages, as Mr. Herbert Spencer has remarked, the greater use of the jaws in chewing coarse uncooked food would act in a direct manner on the masticatory muscles, and on the bones to which they are attached. In infants long before birth, the skins on the soles of the feet are thicker than on any other part of the body; and it can hardly be doubted that this is due to the inherited effects of pressure during a long series of generations."

Regarding mere irregularity there can be no doubt as

Kingsley says, "that the primary cause, so far as the individual is concerned, of any general disturbance in the development of the permanent teeth, showing itself particularly in their malposition—is directly traceable to a lesion or enervation of the trigeminal nerve; it is an interference more or less prolonged and operating at its origin;" but the causes for this interference are not far to seek. Whenever we have the blood supply drawn from this nerve centre, from whatever cause, we will have derangement of its functions; now there may be an undue stimulation of the brain (overpressure), or prolonged disease of any organ or portion of the body or any general nervous derangement such as infantile convulsions, epilepsy, chorea, or paralysis. With all this, however, I find it hard to discover where intelligence comes into play. I think it may be, therefore, that the contraction of the dental arch is not due so much to intellectual interference as to atrophy; from the disuse of surrounding muscles. I have been unable to trace any relation between intelligence and deformed jaws, nor have I found any proof of it in Dr. Kingsley's book, unless he holds that education and intelligence are synonymous terms. Now education has been defined as the "art of drawing out or developing the faculties of training human beings for the functions for which they are destined," whilst the intellectual powers are explained in part by their contrast with feeling and will. When we enjoy pleasure or pain we are said to feel; when we act to procure the one or avoid the other we put forth voluntary energy, when we remember, compare, or reason, our intelligence is exerted. Precocity by over nervous stimulation may bring about irregularities, but then precocity is not intelligence, and it is scarcely possible that the workings of the intellect of a child between the ages of four and seven could materially effect such an interference as we have been considering. There can be little doubt that to the overpressure at primary schools we can attribute many sad effects both on the general health and on the teeth, but we must remember that those on whom this pressure is most felt are those of least intelligence.

Altogether I have come to the conclusion that this insidious contraction of the jaws is not due so much to a psychological as to a physical refinement, a refinement which

may be traced to the gradual desuetude of the muscles. Our ideal of the intellectual giant is not associated with contracted features, but rather with the strongly marked bony framework and the massive under jaw. Although it would not be true to say that a great intellect never dwells within a deformed body, yet it will generally be conceded that the healthier the body and the freer it is from deformities, the stronger, and, in a broader sense, the more healthy will be the intellect.

Mr. Campbell agreed in the main with the views so clearly expressed in Dr. Kingsley's paper. It was of the first importance to have a clear idea of correct principles, which, when thoroughly understood, could be brought to bear upon each particular case. It would have been extremely interesting to have seen a few of the ingenious appliances made use of by Dr. Kingsley for regulating teeth. The plate used by him, and shown by Mr. Finlayson, for "jumping the bite," was quite a new idea to him; he had recently a similar case to that now before them, the superior central incisors projecting considerably beyond the lowers. He told the young lady's mother that twenty years ago he would have taken her daughter's case in hand at once, and, no doubt, would have succeeded in bringing the teeth into a proper circle, but experience had taught him the difficulty of retaining teeth so moved in their new positions. He thought it quite possible "jumping the bite" might be the correct treatment in the case referred to. He could not help expressing surprise that Dr. Kingsley had made no reference to Dr. Coffin's split plate for expanding the arch; he (Mr. Campbell) did not know of any appliance which would compare favourably with it for simplicity and efficiency. In reference to Dr. Kingsley's remark, that "in the higher social scale it is exceptional to find a young person with a developed and regular row of teeth set in a well formed and perfectly rounded arch," he had no doubt that Dr. Kingsley was correct in respect to the United States, but he would give as the result of his observations, that the upper classes in Scotland have, as a rule, well developed maxillæ and fairly regular teeth.

The Secretary (Mr. Amore) agreed with most of the remarks made by Mr. E. A. Cormack. He was certainly

not of the opinion that those whom we were accustomed to look upon as owning a giant intellect were possessed of small jaws; he knew of one in which this was reported to be the case, but he could put against that a far greater number who had a jaw more resembling the square set type to which Mr. Cormack had referred. Undoubtedly healthy vigorous exercise tended very strongly towards the development of a well formed bodily frame, and if, after the acquirement of such a condition by a certain class of people, it were to be perpetuated by intermarriage, we should expect to see the jaws and teeth share in the beneficial results. The British aristocracy, as had been remarked by Mr. Campbell, had, as a rule, well developed maxillæ and good dentures, and in our own country that class approach more nearly the conditions just described than any other. Apart from Mr. Campbell's experience, he knew, from those who had good reason for their statement, that among the upper ten, where early mental training was usually associated at the public schools with abundant vigorous exercise, and where from social reasons intermarriage among members of that class was the rule, we found both well formed jaws and good teeth, and he thought that many members of the British aristocracy might fairly be taken as types of well developed humanity, both physically and intellectually.

The President said the discussion had gone a little more into the causes of dental irregularities than into their treatment. Whatever might be the case in America, he thought they would all agree with him in saying that here, overcrowding of the teeth and contraction of the jaws were not peculiar to any social class, but pervaded all, being probably least marked in the higher classes.

In that class of cases with which some amount of mental weakness was by some authorities associated, they found the arch of the *upper* jaw irregularly contracted, the incisors, especially the *centrals*, rather prominent, and the vault of the palate high, while the arch in the lower jaw was comparatively much wider, the incisors closing decidedly within the uppers, so giving an apparently great recession of the chin. In these cases a great deal could be done, by opening out the arch, for which purpose Coffin's split plate was pre-eminently

adapted. The series of models of the two cases sent by Mr. Matthew illustrated its advantages very markedly, and he much regretted that Mr. Matthew had not been present, so that they might have had his course of treatment explained in detail. In the more complicated case the curvature had been so widened and rounded that it was a little difficult to realise that the first and last were models of the same mouth. He, like Mr. Campbell had been struck by the absence of all mention of Dr. Coffin's contrivance in Dr. Kingsley's paper, possibly it was included in the general term wedges, as used in it.

In those cases in which there had been enormous development of the cranium at the expense of the maxillæ, the lower jaw was proportionally as narrow as the upper, in many cases even more so, and, in his opinion, irregularity in this was best treated by removal of some of the teeth.

Nature seemed to be experimenting on the subject, witness the much more frequent suppressions of the lateral incisors, especially in this class of cases. He quite agreed with Dr. Kingsley's remarks as to the very persistent tendency shown by teeth which had originally projected to return to that position, more especially when the irregularity was hereditary, at the same time, he thought there was less of that tendency when there had been some of the teeth removed.

He was much pleased that the subject had led to such a free expression of opinion among them.

CASES OF INTEREST.

The President exhibited a lower second bicuspid, the crown was more than twice the size normal to the jaw. The form was slightly aborted, but it had only the usual root.

The President then announced that their next meeting would be on the second Thursday in January, 1885.

DISTINCTIONS CONFERRED UPON DENTISTS.—Dr. Miller, whose name is well known in connection with the germ theory of dental caries, has been appointed by the German Minister of Education, Royal Professor in the University of Berlin. This is an honourable distinction of notable value and is conferred only upon those whose work is held in high esteem by the powers that be.

PROFESSIONAL SERVICES AND PROFESSIONAL FEES.*

By EDWIN T. DARBY, M.D., D.D.S.

Mr. President and Gentlemen :—I appear before you this evening to fulfil a promise made to the worthy chairman of your executive committee some months ago. But in doing so I have been beset by one of the greatest difficulties which it is the lot of an essayist to encounter, namely, the selection of a subject. I have spent more anxious thought in the effort to decide upon a theme appropriate to this occasion than would have prepared a better paper than the one to which I now invite your attention.

The subject which I have chosen is peculiar, in that it has seldom been discussed by our societies, but it cannot fail to be of some little interest, because it relates to the chief object of our toil. As a sentiment it sounds well to say that we work for the good of the public. As a fact, we work for the good of ourselves, and those dependent upon us.

Professional services, like articles of merchandise, have a value which is usually relative, but is, nevertheless, determined by the law of demand and supply. Most articles which are bought and sold are subject to this law. Scarcity of anything merchantable enhances its value. Diamonds are valuable because they are rare. If it were possible to crystalize the coal beds of Lamokin, and Scranton, and Newcastle, diamonds would sell for six dollars per ton instead of two hundred per carat.

Fine works of art are valuable because they are rare. If the paintings of Michael Angelo, and Raphael, and Murillo, and West, and Turner, were as common as the cartoons of *Puck*, they would be as valueless.

Fine tapestries, and laces, and cloths, and bronzes, and watches, and mechanical appliances are valuable because they are the product of skilled labour, and skilled labour is rare and commands high wages; while the former may be absolute, the latter is usually relative. The value of all articles of merchandise is determined by the law of supply and

* Read before the Central Dental Association of Northern New Jersey, and reported in *Independent Practitioner*.

demand. It is the quantity of an article produced, and the demand for such an article, which makes it valuable or otherwise. The same law will in a measure apply to professional services.

Professional services, like articles of merchandise, have a value which is either absolute or relative, and is determined by the quality, demand and supply.

The same law applies with equal force to all commodities. When there is a dearth in the wheat or corn crop, the price is high. When there is an excess over the demand needed for consumption, the price is correspondingly low. The demand and supply regulates the price, and the price is usually the value. Ordinarily speaking, a thing is worth all that it will bring, but there are fancy or fictitious values in contradistinction to real or intrinsic. It is hardly reasonable to suppose that a horse is worth \$40,000 or a dog \$5,000, or a cow \$2,500 ; but cows, dogs, and horses have been sold at these prices and the inference is they are worth it.

Society demands some standard of valuation, and when applied to the commodities of life it is regulated by the law above referred to.

The services of professional men do not, strictly speaking, come under this head, for every man is, in a certain sense, a law unto himself. It is true that some professions have their scale of prices, or fee bills, as they are termed. The lawyer has a certain fee for drafting wills, and deeds, and mortgages, and replevins, and judgments, but these are formulated writings which can be deputized to another ; hence a fixed price is usually charged for such writings. When the question is one of opinion, the fee is variable, and may be high or low, just in proportion as his services are much or little sought after. Strictly speaking a lawyer's fee is what he charges for his individual services ; the value of his opinion, the price of his retention in a case. His retaining fee may be \$5 or \$50,000, and is determined by the importance of the case, the labour required, and in some instances by the fatness of his client's pocket-book. Physicians have a fee bill, or scale of prices, but they seldom adhere to it, and with most practitioners it is a dead letter. It stipulates what shall be the minimum charge for an office

or residence visit, but does not say what the maximum charge shall be. The public have just about as correct an idea of its meaning as they have of a gas meter after reading the directions on a gas bill.

As a rule, physicians are underpaid. No class of professional men do more work gratuitously than does the conscientious practitioner of medicine. He is at the beck and call of the poor and lowly, and in the earlier days of his professional career receives more "God bless yous" than substantial fees. It is only when he becomes celebrated that he begins to reap what he has sown during the years of his obscurity. One of the most celebrated physicians of Philadelphia once told me that when he began the practice of his profession in that city his fee for a visit was twenty-five cents, and he was thankful if he collected that.

The men whose names are historic in medicine, and those who are now celebrated, have risen from obscurity, and have received small fees in the beginning. To the beginner a small fee is better than no fee at all; a half loaf better than none: and the practitioner who has worthy aims is better content to attend the poor for insignificant fees, than to sit in his office and wait for the calls of the rich. The medical man who did most for small fees at the beginning is generally he who has done most for large fees in after life. A century ago a young man of obscurity graduated from the University of Edinburgh, and at once settled in the city of London. He paid six shillings and sixpence for his room rent, and received from his practice the first year five pounds (£5); but in after years when swaying the surgical sceptre of England, as Sir Astley Cooper, his practice in a single year amounted to £23,000.

If statistics are reliable the American public receive their medical attention at a very small cost *per capita*. Recent calculations have shown that in the city of Philadelphia, where there are, perhaps, a greater number of physicians in proportion to the population than in any city in America, the average annual income of physicians from their practice is less than \$1,200.

The quality of professional service determines its value. It sometimes happens that the public obtain the services of

skilful men for less than they are worth, but, on the other hand, they often pay exorbitant fees for ignorance or malpractice. There is, perhaps, nothing for which money is paid that is so uncertain in its value as professional service nor is there any subject upon which the public show a greater amount of ignorance than in the matter of professional skill. No better illustration of faith could be found than is daily witnessed by the medical man. The public opens its great mouth to skilful and unskilful alike, and allows the quack and charlatan to pour, as Voltaire has said, "drugs of which they know little into stomachs of which they know less." Society, like a wagon wheel, runs in ruts. It not infrequently happens that men of mediocre attainments have become celebrated and affluent, because the tide set in their direction. People patronise a man because the *elite* of the village or city do so, and often pay exorbitant fees for services which are of themselves valueless. It is sometimes more profitable to become fashionable than to become skillful. Who of us cannot recall men whose offices are thronged with admiring patients, joyously paying large fees for inferior services, while his professional neighbour, conscious of superior skill languishes in poverty and obscurity.

(*To be continued.*)

Reflections from the Surgery.

NEW YORK EYE AND EAR INFIRMARY.

Aural Service of SAMUEL SEXTON, M.D.

The following remarkable cases are reported by WM. A. BARTLETT, M.D., Assistant Surgeon, in the *New York Medical Record* ;

PAIN IN THE EARS DUE TO IRRITATION IN THE JAWS.

SOME of the following cases of otalgia and inflammation of the ear were presented by Dr. Sexton to the physicians attending the aural clinical instruction given by the School of Ophthalmology, Otology, and Laryngology of the New York Eye and Ear Infirmary ; others were taken from the clinical records. The experience of the clinic shows that among the poor earache is, in many instances, due to simple otalgia arising from dental caries. Sometimes it is found

that even when otalgia is very severe indeed, no signs of hyperæmia or of inflammation are to be found in any part of the ear. Again, in certain chronic or acute inflammatory processes present in the ear, very great exasperation of the case is manifestly produced by the reflex agencies already alluded to.

These cases, divested of other details than those more particularly relating to the subject, are taken from the record book in the order in which they presented themselves, and may be said to be fairly illustrative of the troubles under consideration. They do not, however, represent the entire number of cases of this kind seen during the period of time embraced between the first and last cases noted. Very often, it may be premised, a cure is effected in these cases by the extraction of diseased teeth.

CASE I.—Bertha S——, aged six (vol. vii., p. 2). *Otalgia*.—Came to the Infirmary June 15, 1883. For the past year has at times had pains in ears, and two years ago one of them discharged. Several days ago pain began again in both ears, and she cannot sleep at night. *Examination* showed the left canal to contain a mass of cerumen; the right membrana tympani lustreless and hyperæmic. *Teeth*: Lower first and second molars on both sides mere shells. *Treatment*: She was recommended to have the shells extracted from the jaws, and was given small doses of the tincture of aconite root for the pains. *Remarks*: In this case the irritation from the carious teeth had doubtlessly been the cause of the collection of wax in the left canal and the otalgia in the right ear.

CASE II.—Mary B——, aged twenty-one (vol. vii., p. 12). *Otalgia*; *Cerumen*.—Came to the Infirmary June 22, 1883. Complains of severe pains felt in left ear for two weeks, which seem to constantly get worse. Worse in open air, and at night so intense as to keep her awake. No tinnitus or discharge. *Examination*: Both canals filled with cerumen. *Teeth*: Both upper wisdom teeth in a carious state. Both lower wisdom teeth just cut. Owing to loss of some of the upper teeth, a vulcanite plate has been worn for four years past. *Remarks*: The irritation caused by dental caries and the cutting of the lower wisdom teeth in the above case was increased, no doubt, by the vulcanite plate worn.

CASE III.—Nora H——, aged forty (vol. vii., p. 44). *Otitis med. dif. Externa Otagia*.—Came to the Infirmary August 7, 1883. Has had head-ache for one year and a half, but never had aural trouble before. Has had pains in the right ear for the past two days without discharge. *Examination*: The teeth are exceedingly bad, and the right external auditory canal is the seat of diffuse inflammation. *Treatment*: Calc. sulphide in one-half-grain doses every three or four hours; tincture of aconite root in small doses.

August 10th.—Swelling less; feels a little better. The patient probably became more free of pain, for she did not return.

CASE IV.—Henrietta G——, aged seven (vol. vii., p. 54). *Otagia; Odontalgia*.—Came to the Infirmary August 14, 1883, with her own diagnosis—that her ear-ache was due to tooth-ache. *Examination*: The right membrana tympani is hyperæmic. *Teeth*: Both of the lower six-year molars are carious.

CASE V.—N. M——, aged 10 (vol. vii., p. 71). *Otagia*.—Has had more or less deafness for five or six years past and teachers have occasionally discovered the defect in hearing. Was obliged to leave school on account of otalgia. *Examination*: The right membrana tympani lustreless, with prominent folds due to defective development. The left canal contains considerable soft wax, obscuring view of membrana tympani. *Teeth*: All of the six-year molars are carious as well as many of the other teeth. Hears a loud voice only in both ears. *Treatment*: Small doses of aconite were ordered and the teeth were to be attended to.

CASE VI.—Amelia P——, aged twenty-two (vol. vii., p. 84). *Otagia*.—Came to the Infirmary on September 18, 1883. Heretofore has never had any ear trouble, but for past two weeks has had a pain in left ear, intermittent in character, and worse at night when lying down. Had both upper canine teeth extracted and the upper right second molar, but this had no perceptible influence on the otalgia. The ear pain shoots over the brow and down the lower jaw. Has some laryngeal discomfort on account of pharyngitis with tendency to ozena. Menstruation is normal. *Examination*: Right canal small and membrana tympani hyperæmic

Canal contains small quantity of cerumen. The left ear in same condition as the right. *Teeth*: Had both upper second bicuspid removed previous to coming. In the lower jaw there remain in a carious state the two right inferior bicuspid and the first left bicuspid. Removal of the dead teeth recommended.

CASE VII.—Lizzie C——, aged twenty, Irish, seamstress. *Otalgia*.—Came to the clinic October 1, 1883, giving the following history: No specific, malarial, or rheumatic taint. Has slight pharyngitis and has never suffered from dentalgia to any great extent. During the last four years has had repeated attacks of ear-ache on left side lasting for a day or a day and a half, unaccompanied by tinnitus or deafness. The present attack, for which she came for relief, began four weeks ago and has continued constantly and quite severe to date. *Examination*: Teeth covered with tartar, several being carious in both the upper and the lower jaw. The auditory canals and tympanic membranes normal in appearance. *Treatment*: To have the dead teeth extracted and tartar removed. October 4th, removal was followed by almost complete relief. October 7th, has been entirely free from pains since last note was made.

CASE VIII.—Mary L——, aged twenty-four (vol. vii., p. 219). *Otalgia*; *Otitis externa circ. Acuta*; *Disease of Teeth*.—Came to the Infirmary October 30, 1883. Takes cold easily. For a week so much pain in right ear that rest has been difficult, and in consequence she is very nervous. The right ear discharges a little; tinnitus is not complained of, and hearing is unaffected. Two years ago the ear pained without discharging. The teeth have ached a good deal. *Examination* of right ear showed that the meatus was closed by swollen tissues; hears a low voice in both ears. *Teeth*: Upper right first and second molars absent. Lower first right molar carious, and the third molar just cut. *Treatment*: Calc. sul., grs. every two hours; hot poultices.

November 3d.—No redness; pains ceased on night of the 1st inst., when a discharge began; canal contains some pus. Treatment continued. Advised to have dead teeth removed and fillings put into such as had sufficiently healthy pulps.

It is noteworthy in the above case, that besides dental

caries there was the additional irritation caused by the rather late, and probably somewhat difficult, eruption of a wisdom tooth on the same side with the affected ear, and it is not improbable that the previous otalgia experience was due to this cause. That the furuncle was due to the irritation in nerves of the inferior maxillary branch seems most probable.

In commenting on this subject, Dr. Sexton drew attention to the frequent attendance of females suffering from aural trouble through sympathy of the nerves, and the comparative infrequency of the complaint among men; even in children, he thought the greater number of otalgias occurred among females. In reference to the treatment of these cases, it was believed that since dentistry had become such a popular business, and dead and diseased teeth had been so carefully retained in the jaws through their influence, especially among the better-to-do, nervous diseases about the head were becoming alarmingly common. The very general custom of wearing false teeth in the mouth attached to vulcanite rubber, celluloid, and other plates was also an evil of vast proportions. Indeed, he sometimes thought that the evil done through ill-advised dentistry was greater than the possible good arising from the work of the more capable dentists.

TOOTH IN THE ANTRUM OF HIGHMORE.—A case of considerable interest is chronicled in the Proceedings of the New York Pathological Society. Dr. J. A. Wyeth presented one of the permanent teeth which he had removed from the antrum of Highmore in a woman 26 years of age, who had suffered from difficulty referred to that locality for about thirteen years, dating from an attack of measles or scarlet fever. A dentist had drawn a tooth, from the locality of which pus discharged from time to time for some years afterwards. Dr. Wyeth extracted two of the teeth, and entered the antrum for the purpose of cleaning it and establishing drainage, when he came upon the foreign body in the form of a tooth. It was the only authenticated case of the kind of which he had any knowledge. He asked the members if they had a similar experience.

British Journal of Dental Science.

LONDON, JANUARY 15, 1885.

SCIENCE AND SENTIMENT.

The readers of the *Times* have been favoured of late with a discussion upon that well worried question: is vivisection to be considered a necessary evil? The question has given vent to the stored up eloquence of all sorts and conditions of men. Prelate and peer, the animals' trusty mouth-piece, Miss Frances Power Cobbe, and a host of others, whose names lend weight to the efforts of their pens. The whole question has been dragged so often before the public that it is extraordinary that the broad lines which bound its length and its breadth are not more clearly comprehended. There are few if any who would support vivisection save upon the ground of expediency; to do to death and still more to do to torture without aim or object save pure wantonness, is confined to the laity, among whom the pleasures of the chase, and the delights of horse-racing are held in esteem, such practices find no place in the Physiological Laboratory or the experiment chamber of the seeker after the hidden mysteries of Truth. The pity has been, that well meaning people who distraught with sentiment have fancied harrowing scenes of tortures, and have narrated such mere brain pictures as though they were fact. We remember the crusade of the Antivivisection Society which a few years back raged in London. There were pictures which to the ignorant, and ninety-nine hundredths are ignorant upon this matter, told in as pathetic a manner as posters can, the sorrows and distresses of dogs, rabbits and cats. "Think," said the grim representation, "think gentle reader that such a fell chance might befall your trusty companion, think and tremble," or words to that effect. To the few wise men,

such delineations were traced to the sources, the works of the Cyons and were found when the whole context was read, to tell no tale of horror but a straightforward enough experiment performed upon an anæsthetised animal. The truth is, that however well meaning the movement which aims at a total abolition of vivisection, it is misdirected. There is alike ignorance of the methods used in physiological research, and an entire lack of knowledge as to the ultimate effect such experiment has upon the science and art of practical medicine and surgery. Knowledge moves in waves; the waves fall upon the different sections of society at epochs widely remote. The old modes of learning are forgotten by the men in the forefront of professional life, none among them would dream of argument about a matter capable of being put to the test of experiment. In the old days such tests were held to be impious by a majority of the world's keenest thinkers, but the method of experiment asserted its own method and has ousted the method of arguing about what matters ought to be, *i. e.*, according to the thinkers' notion. At the present day, however, the force, the cogency of the experimental method has yet to be understood by the laity. Sentiment, or the wish that things should be arranged as we think is best and happiest for men and animals, is father to the thought, and so, those whose minds possess a bias on the sentimental side, refuse to accept experiment as a lawful procedure when it entails pain to others. It is unnecessary to take page by page the history of surgery and medicine, the veriest tyro knows how much these sciences owe to the physiologist, and in dentistry, as in the parent science, surgery, experiment has proved of the first importance in guiding us to progress and improvement in our methods. The subject of transplantation of teeth kindred with that of skin grafting, owes its existence to the well-known experiment upon the cock's comb. The various researches which have resulted in replacing lost bone are again examples of the benefit which surgery and dentistry

has received *from the assistance* of physiological experiment. The outcome of these evils will naturally be that practitioners afraid to employ research will execute experiment, it may be unwittingly, upon their patients. We leave it to our readers to judge who will under these circumstances be the gainers.

DENTAL APPOINTEENTS AT SCHOOLS.

We took occasion some months back to point out how miserably decrepid was the machinery by which the larger schools and public institutions provided the services of a dentist for the masses of human beings there congregated. The large number of schools, especially those under the authority of the Poor Law Board have practically no skilled officers. The "Doctor" pulls out teeth when asked so to do, and there this primitive dentistry commences and ends. It savours strongly of the lines, "Rattle his bones over the stones, he's only a pauper whom nobody owns." Only in this case it is the teeth which are rattled. We hope, however, that this abuse may be remedied and the more so as members of the profession are seriously turning their attention to it. In our present issue we mention an appointment which may we trust, prove the olive-branch-bearing dove, which gives earnest of better things to come. At Anerley in Surrey, is a larger school, the North Surrey District School which takes in nine hundred and fifty boys ranging in age from eight to fourteen. It was most wisely determined to appoint a dental surgeon to this institution and accordingly such an appointment was duly advertised. The honourarium attached was fifty pounds which would cover travelling expenses. We learn that the duties consist in attendance once a week while the school authorities provide all the instruments et cœt. The importance of such posts cannot be estimated too highly. For clinical experience and practice they possess peculiar advantages since besides affording a wide range of practice, they ensure to the dental surgeon that his directions will be carried duly into execution. The patients are always under observation and so the most careful and exact records

are obtainable, while results can be studied and conclusions arrived at with the utmost precision. The fact that fifty applicants for the post came forward amply bears testimony to the high regard which the profession have for such posts. We sincerely trust that the Local Government Boards of other districts may see their way to following the good example set them by the Board of the parishes of Dorking, Norwood, Lewisham, and Anerley and institute similar appointments throughout the length and breadth of the land. We congratulate Mr. Henry Moxon upon his accession to a sphere which will afford him most valuable opportunities alike for the practice of his profession and for collecting facts bearing upon dental pathology, prosthodontics, and dental surgery. It cannot be too often or too vehemently urged that all who have influence with members of the various local boards, prison and penitentiary committees should enlist their aid and sympathy with the multiplication of post kindred to the one instituted at Anerley.

THE BENEVOLENT FUND.—We have pleasure in inserting the following appeal sent to us by the secretary. The committee earnestly appeal for votes on behalf of the following case. The election takes place on the 23rd of this month

TO THE GOVERNORS OF THE LONDON ORPHAN ASYLUM.
WATFORD.

The favour of your Votes and Interest is earnestly solicited on behalf of Duncan Campbell King, aged 9 years, eldest child of the late Octavius Barnard King, who practised for many years as a Surgeon Dentist at Brecon, South Wales. His short illness (of Rapid Consumption) and early death, prevented him making any provision whatever for his Widow and five young Children. The Case is well known and Strongly Recommended by many influential persons. Proxies will be thankfully received by the Widow, Mrs. O. King, at her residence, Ledbury Road, Hereford.

OAKLEY COLES, *Hon. Sec.*

January 1st, 1885.

INCIDENTS OF PRACTICE.—Dr. John H. Meyer brought

the following interesting case before the First District Dental Society of New York.—In July last a lady was sent to me having a very large tumour on the left side of the superior maxilla. Upon examining the tumour I found it had two connections, one over the root of the second bicuspid, the other surrounding the root of the same tooth. I advised the patient to have it removed, which was done by first dividing the attachment over the root of the tooth. A great deal of hemorrhage followed, which was difficult to arrest, and as it grew rather dark the operation was deferred until the following day, when the other ligature was cut and the tumour was removed. There was not so much hemorrhage at the final operation. The tumour was of a deep red colour, and measured a little over two inches by one and a quarter, and three-quarters of an inch in thickness. It is of four years' growth, and first showed itself as an abscess over the root, which would disappear and reappear again. About a year ago the patient tried to pass a rubber ligature over the tumour in order to tie it off, but not succeeding, the ligature was left over the thickest part of the tumour, and the tissues grew over it to the thickness of half an inch. I have the tumour with me; also a model of the mouth. Three days after the removal of the tumour I extracted the roots of the first and second bicuspids, and looked for necrosed bone, but there was none. I saw the patient two or three weeks later, and the parts then seemed to be in a healthy condition. I examined it again yesterday, and there was no indication of a reappearance of the disease. I also had the tumour examined by Dr. Van Schaick, who pronounced it to be a chondro-fibroma, showing cartilage cells in various stages of development, with a considerable amount of white fibrous tissue, and containing areas of calcified degeneration.

ILLUMINATION OF THE TEETH.—In an editorial, the "Weekly Medical Review" reviews some of the methods in vogue: We have seen three batteries with their associated incandescent lamps for the illumination of the teeth. The principle of course is not new, but its special advantages relative to the inspection of the teeth are not duly appreciated. The small incandescent lamp has a special advantage

over the heated platinum and promises to make it more extensively used. When the small lamp is placed behind a tooth it illuminates it brilliantly and reveals instantly any decay or atrophy, and with the aid of the small mirror attached the actual manipulations on the tooth can be carried on independent of daylight. Some, who having lost their teeth have been supplied by art, question the advantage of the normal tooth, and the dentist with this light may be led to question for his work at any rate the advantage of daylight. The question of the light for simple inspection of the teeth we think is practically settled in favour of the incandescent lamps but the source of the light is still sub judice. It is probable that the form of the cell to be used will lie between some modified form of the Leclanche or the cell said to have been exhibited by Mr. Party at the Electrical exhibition at the Franklin Institute. In those that we have seen there was used the Bunsen cell, and the bisulphate of mercury cell as used in the Gaiffe battery ; and the contrivance consists of a small incandescent lamp of varying candle power attached by insulated wires, and thus completing the circuit of the battery.

HOW CELLULOID IS MADE.—Under this heading we find "Items of Interest" writing :—"While about everybody has heard of, seen, or used celluloid, only a few know what it is composed of, or how made. The following is a description of the process carried out in a factory near Paris for the production of celluloid ; A roll of paper is slowly unwound, and is at the same time saturated with a mixture of five parts of sulphuric acid and two of nitric, which falls upon the paper in a fine spray. This changes the cellulose of the paper into pyroxyline (gun cotton). The excess of acid having been expelled by pressure, the paper is washed with plenty of water till all traces of acid have been removed ; it is then reduced to pulp, and passed on to the bleaching trough. Most of the water having been got rid of by means of a strainer, the pulp is mixed with from 20 to 40 per cent. of its weight of camphor, and the mixture thoroughly triturated under mill-stones. The necessary colouring matter having been added in the form of powder, a second mixing and grinding follows.

The finely divided pulp is then spread out in thin layers on slabs, and from twenty to twenty-five of these layers are placed in a hydraulic press, separated from one another by sheets of thick blotting paper, and are subjected to a pressure of 150 atmospheres till all traces of moisture have been got rid of. The plates thus obtained are broken and soaked for twenty-four hours in alcohol. The matter is then passed between rollers heated to between 140 and 150 degrees Fahrenheit, whence it issues in the form of elastic sheets. Celluloid is made to imitate amber, tortoise shell, coral, malachite, ebony, ivory, etc., and besides its employment in dentistry, is used to make mouth pieces for pipes and cigars, handles for table knives and umbrellas, combs, shirt fronts and collars and a number of fancy articles.

PYORRHOEA ALVEOLARIS AND ITS TREATMENT—Dr. Barrett's opinion. I believe a concomitant, at least, of severe cases, is a kind of caries of the alveolar edges. It cannot be called a necrosis, for there is no sequestrum; but it is a disintegration of the edges of the septums and walls due perhaps to a periodontal inflammation. I never had any success in treatment until I had established a clear line of demarkation; the after treatment was then only palliative. The remedy that I have found most efficacious has been chloride of zinc. The stimulating effects of this preparation in the formation of healthy granulations are too well known to need argument. I know of nothing that possesses these virtues in so great a degree. After the surgical operation I usually apply aromatic sulphuric acid in full strength, and the subsequent treatment consists in the application of a solution of chloride of zinc in such strength as the case seems to demand.

SHARPENING DULL FILES.—“Items of Interest” gives the following method: After thoroughly cleaning with soap, alkali and a stiff brush, immerse them in 1 part nitric acid, 3 parts sulphuric acid, 7 parts water. They should remain from quarter of a minute to a half hour according to the fineness of the cut. Now wash them in hot water, dip them in the milk of lime (water which has been saturated with quick lime) and then dry and oil.

NEURALGIA CAUSED BY EXOSTOSIS.—The *Dental Register* gives the following case: A lady suffered from intense neuralgia in the region of the second and third branches of the trigemini; especially during mastication, the pain in the right superior maxillary bone was so violent as to force the lady to chew only on the left side of her mouth. These neuralgic attacks, which were really very severe, had existed for several years. As the patient had besides been several times the victim of inflammation of the right external meatus, Dr. Moos, who attended her, and who reports the case in the *Berl. Kl. Woch*, 8, 1884, inquired further into the history of the neuralgia, and found that it always seemed to start from a definite point in the same meatus. Ocular inspection revealed the presence of a small exostosis of the size of a split pea in the meatus. There were two other exostoses in this passage, both anterior to the one first mentioned, but Moos soon discovered that the posterior one was alone sensitive. This exostosis was, therefore, removed with the straight chisel, and the pains at once ceased, and have since (nearly ten months) not returned. As a remarkable fact may be mentioned, in conclusion, that while the pain specially affected the second branch of the nerve, it started in the third, upon which the pressure was exerted by the exostosis. It is not in all neuralgias that we can find a starting point. But we should always look for one; and if determined, it will generally be observed that some new growth exerts pressure on the nerve. This new growth may either be a tumour or the product of inflammation, as thickening and swelling of adjoining tissues, or accumulation of matter, as is frequently noticed in cases of a carious tooth, where a small abscess forms at the root of the tooth and causes the neuralgia by tension, *i.e.*, pressure upon the nerve.

LANCING THE GUMS.—It would be interesting if dentists would give their experience of this practice. A controversy is being carried on in our contemporary, the *Lancet*. While some writers aver it is a practice which is highly useful and needful; as stoutly do others take up the cudgels for the often "Noes," and regard lancing the gums as barbarous and useless.

HYDROCHLORATE OF COCAINE FOR OBTUNDING SENSITIVE DENTINE.—An American dentist practising specially operative dentistry, says in the *Cosmos*, that cocaine obviates the dread of patients for the engine drill. When the new local anæsthetic was first brought out, he tried a four per cent. solution, and the experiments with it have been very satisfactory, although probably better results can be obtained from a stronger solution. He thinks its application as an obtunder of sensitive dentine has marked a new era of progress in this direction. One of the patients was a married lady, aged twenty-four, with extremely sensitive dentine. After applying stimulants and sedatives without effect, the cocaine was tried. Adjusting the rubber-dam, a small pledget of Japanese paper saturated with the solution, was packed into the cavity and left for a short time. Upon removing it the engine burr was used, and to the delight of patient and operator the excavating was performed without pain. Three cavities were prepared for filling in like manner, two applications of the anæsthetic being made to the larger of the cavities.

BROKEN GUM TEETH.—'Tis said, according to the "Dental Student," that very many teeth, mounted on rubber or celluloid, are broken in removing the plate and teeth from the casing by hurrying or carelessness. Dentists often pry their flask open in a hurry or rap the flask hard with a hammer to loosen the plaster, and by concussion break the teeth opposite the blow. A few have found it out by sad experience but more prefer to lay the blame on the grade of teeth they may be using than to themselves. Another very easy way that the gums may be broken is in finishing up. How often after taking a set from the flask we find no cracks in the gums, but before finishing find the gums checked, which is done in holding the plate too tightly in the hands while filing. The rubber being pliable and springy, the gums being solid and thin, will break if they are sprung, the least imaginable. A quick rasp of the file will also do this.

TO MAKE a good black varnish for iron or other metals: dissolve by heat three ounces of asphaltum, four quarts of boiled oil, and eight ounces of burnt umber. Mix the compound with turpentine while cooling.

Abstracts of British & Foreign Journals.

DEUTSCHE MONATTSCHRIFT FÜR ZAHNHEILKUNDE.

DWARF'S TEETH, by E. SCHWARTZKOPFF, Eisenach.

In giving his experiences on dwarf's teeth Herr Schwartzkopff says that in three several cases, two of the dwarfs belonging to one family, he has found on measuring the teeth they not only reach the normal size, but in one case considerably exceeded the maximum size. He says that a female dwarf aged thirty-five years came to consult him. He noticed the strongly-developed jaw and the great teeth, and when a man of the same diminutive growth came to him later on showing the same peculiarity, he was convinced that the jaws and teeth of dwarfs are abnormally developed. In the first case he found an explanation in the fact of the patient's head being unusually large; so that in the proportion to the size of the head, the size of jaw and teeth was normal, but with regard to figure they were abnormal.

But the next two cases were unlike. At the time of a shooting festival in Eisenach a dwarf came to him to have his tooth drawn; he designated the left upper first molar as the painful one. When drawn the tooth was worthy of the strongly-developed jaw. Dr. Schwartzkopff says, of a collection of thirty-two upper molars, upper wisdom teeth not excepted, it was the largest. The length was twenty-six m.m., the commencing breadth of the foremost labial root eight. The breadth of the palate root seven m.m. The tooth is still in his possession, and after nine months has not been exceeded in size by any other drawn by him.

On telling the little man that he should forget the pain in the joy of having such gigantic teeth in his mouth, he did not seem contented with their size, and said that his brother who was three years older than he and of a smaller size, possessed still larger teeth. Dr. Schwartzkopff's desire to prove the truth of this assertion caused him to visit the shooting place where the brothers were on view by payment.

That the patient had spoken the truth about the gigantic size of his brother's teeth, was proved without even

measuring. The crown of the tooth was even broader and the root still larger. Dr. Schwartzkopff's offer to buy the tooth of him was not accepted. He measured the place and position from which it had been removed, the length of the whole tooth by the foremost labial root was 32 m.m. at the back, 30; the greatest diameter of the crown, 16; the greatest distance of the root points from one to another, 20 m.m. The inspection of the mouth showed that all the teeth still present were worthy neighbours of the one extracted. The disinclination for further measurement of teeth in the mouth, as well as the circumstance that the possessor of this tooth wore it as an amulet or talisman about his neck, showed Dr. Schwartzkopff that it was looked upon as a harbinger of happiness and extraordinary luck. This man was some centimetres smaller than Dr. S.'s client. Both were in good condition, the dimensions of the head were small, about proportional to those of the body. From the outward appearance of the jaw one would not have expected to find such large teeth. Dr. Schwartzkopff is far from asserting that the teeth of dwarfs are larger than those of other men. With the diminutiveness of the dwarf is generally some malformation, generally small legs and thick heads. A thick head can carry a strong jaw, and therefore larger teeth.

In the first place, this observation was proved correct, at least in regard to the head, but in the two last only with regard to the legs; therefore Dr. Schwartzkopff does not venture to assert that dwarfs are by nature provided with stronger jaws and larger teeth than other people. In large towns and Dental Hospitals this question might be studied with great advantage.

DR. DUPLAY'S APPARATUS FOR PREVENTING ASPHYXIA
DURING OPERATIONS ABOUT THE MOUTH.

Dr. Duplay, from Rochefort, has discovered a means of simplifying anæsthesia in operations in the fore part of the cavity of the mouth (*vestibulum oris*). These operations are troublesome for the patients on account of the blood flowing into the trachea and so causing a danger of suffocation. It has lately been sought to avoid this by operating from behind with the head hanging down below the body level. Dr. Duplay uses a little bodice plate cut in the form of an ellipse, its

size must be such as that it will touch the gingi-labial furrows at all points. When put into the mouth of the patient chloroform can be used and no drop of blood will flow behind the alveolar arch. Duplay has used this bodice plate successfully in many operations. He extirpated an adenolipoma from the cheek of a lady and an epithelioma from the lip.

SALIVARY CALCULI, by Dr. Robere.

Dr. Robere gives an interesting case of the sudden expulsion of two salivary calculi. A man, forty-seven years old had enjoyed good health, however, later on he suffered from cramp in the stomach and found difficulty in speaking. For twenty years he had such symptoms from time to time, he had also felt pain in the left side of the inferior maxilla experienced when chewing and on opening the mouth. These attacks lasted two or three days and the patient knew they were not connected with an ordinary sore throat. On the 5th November, 1881, the attack came on with greater severity than hitherto. Dr. Robere made the following diagnosis. The pain is on the left side to the lower jaw and in the neighbourhood of the sub-lingual gland and reaches to the ear on the same side being almost unbearable. As he pressed down the tongue with a spoon there was an increase of the pain in the sublingual and ear regions. Under the tongue he found a swelling and Warton's duct was unduly felt. The left sub-maxillary gland was swollen and painful the tongues lightly furred, the man had an appetite but was afraid to eat for fear of the pain. Robere prescribed soothing embrocations and ipecacuanha as an emetic. The following day the patient was no easier but a day after he was well. He had felt a hard substance under the tongue and on looking in the glass saw a little white point out of which a stone came and soon after it a second. There were no fresh symptoms of Warton's duct regained its normal condition.

ITEMS OF INTEREST.

DENTAL DIAGNOSIS, by Dr. CHARLES J. ESSIG.*

Pain or discomfort about a tooth usually means a morbid condition of the pulp or its environs or is sympathetic. It

* Proceedings of the Pennsylvania State Dental Society.

is often difficult to trace pain to its correct cause, thus to diagnose between that of periostitis and a neuralgia due to an exposed pulp. To illustrate this a case is cited. Great pain referred to an upper tooth on the right side, but not admitting a distinct localisation. It appeared, however, to start from the 1st molar and shoot to the temple; this tooth was found to be devitalized. It was filled with gold according to the contour method, the gum was scarred by former abscess; there was no pain on concussion, elongation, or loosening, no pain was caused by heat or cold. The case was treated as if one of periostitis, subsequently inquiry elicited that the mischief was in the 2nd bicuspid, although no sign had directed attention to it. The filling of gold was removed from the bicuspid, and one of its retaining pins was found to have penetrated to the pulp; an exploring instrument passed into the pulp drew forth pus and blood. Another case illustrative of diagnosis was then cited. A first superior molar had been painful for two days, it was raised and tilted towards the cheek, disease of the palatine root was diagnosed. The tooth was filled with gold, upon drilling through this, the root was found filled with oxychloride, this was removed; pus and blood escaped upon the apical foramen being opened. Here the position of the tooth tilted toward the cheek, and slight elastic movement indicated the presence of pus. Another case of difficult diagnosis is then given.

The mouth had been untreated for ten years, there was great pain in the left inferior second or third molar. With care it was found the pulp of the wisdom tooth was slightly exposed and alive, that of the second molar being dead. Some tissue projecting through the opening in the pulp chamber, presented a violet-coloured nodule simulating pulp.

In this case the patient could not distinguish by sensation betwixt the gum and the pulp. He related another case:

There was severe pain and swelling, elongation of the inferior first molar, and a small circumscribed abscess on the right superior canine; neither of the teeth had ever been decayed nor affected by pyorrhœa alveolaris.

Dr. Essig says that small circumscribed abscesses often occurred during the progress of the disease without involve-

ment of the pulp, and that the pus may by extension damage the pulp.

To arrive at a conclusion as to the exact state of affairs the patient was questioned, and it was elicited that the molar had been sensitive to cold previously while the canine had caused trouble; hence it was inferred that while the last was affected by pyorrhœa, the molar had lost its pulp. The application of iced water confirmed this. The pulp chamber was opened, and the abscess about the canine after being incised was cleansed with chloride of zinc.

LOOSENING OF TEETH AS A MEANS OF CURING TOOTHACHE by Dr. Beverard.

Partial tooth extraction causing stretching of its nerves, has been known to cure many cases of neuralgia. Dr. Beverard, of Cannes, has spoken of several cases in which toothache was assuaged by the mere attempt at extraction. He says: I have in the course of my practice drawn a great number of teeth, the extraction being undertaken with a view to removing pain. In such cases it has often happened that the patient has seized my hand just as the instrument had raised the diseased tooth somewhat out of the alveolus. The patient would go away and I should see him after some days when I should find that the replanted tooth had become quite painless. In most cases the movement had not supplied to tear the nerve of the tooth; how can the cessation of the pain be otherwise explained than through stretching of the nerve having taken place?

Literary Notices and Selections.

TWO CASES OF NEURECTOMY FOR THE RELIEF OF FACIAL NEURALGIA.

By GEORGE R. FOWLER, M.D., Surgeon to St. Mary's General Hospital, Brooklyn, N.Y.

The two following cases are deemed by me of sufficient importance to warrant their publication, inasmuch as they illustrate the two most common forms of neuralgia of the face

and the complete relief afforded, in otherwise most intractable cases, by the resources of operative surgical art.

CASE I.—Mrs. M. L.— applied to me in January, 1883, for the relief of a most violent and prolonged neuralgia, referred to the area of distribution of the frontal division of the ophthalmic or first portion of the fifth nerve. She had suffered more or less for several years with milder attacks in the same region, but the present attack had proven so severe and persistent, despite every therapeutical measure, that in sheer desperation she consented to submit to any plan of treatment which held out the slightest hope of relief. When she came under my care she had not had the slightest remission of the pain for full three weeks. Even opiates, unless pushed to the point of dangerous narcosis, failed to mitigate the pain. The conjunctiva upon the affected side was injected, ptosis was marked, and the lachrymal secretion flowed copiously upon attempts being made to raise the eyelid. There was intense tenderness over the point of emergence of the supra-orbital nerve from the foramen.

On February 4, 1894, I operated by Lienhart's method as follows:—An incision was made along the upper margin of the left orbit, and in a direction parallel to the same directly down to the bone. The tarsal cartilage was separated upon a director. The supra-orbital nerve now came into sight, and by keeping the levator palpebrar, as well as the other contents of the orbit wall, depressed by a spatula, was traced back to the point where both it and the supra-trochlear branch are given off from the frontal nerve; beyond which point, after separating the trunk from its accompanying artery, it was severed. By means of a pair of stout scissors the fibrous bridge which binds down the nerve as it approaches the foramen was broken down, the nerve drawn out, and by retracing the upper lip of the horizontal incision, branches of the nerve distributed to the forehead were traced and dissected out. The supra-trochlear branch was divided at the point where it comes upward toward the pulley of the superior oblique muscle. The wound was irrigated with Koch's solution (mercuric bichloride, 1 to 1,000), its edges approximated by horse-hair sutures, and naphthalinated cotton dressing applied.

The after history of this case is entirely uneventful. The wound pursued an aseptic course, occupying less than a week in healing, and the neuralgia disappeared at once. Up to the present time, six months after the operation, there has been no return of the trouble, and a cure may confidently be asserted as having been accomplished.

CASE II.—A.V—, aged fifty-three, German. This patient applied to me in March, 1884, for relief. His neuralgia was of the variety known as *tic douloureux*, and was of three months' standing; for the last six weeks of this time he had been deprived almost entirely of sleep, suffering all the while the most intense and agonising torture. He had been treated by a number of physicians, and all the usual remedies had been prescribed for him, without, however, affording him any relief. The pain extended through the branches of the second division of the fifth nerve, on the left side; hyperæsthesia of the whole surface of affected area existed, as well as a most exquisite sensitiveness of the gum and teeth of the upper jaw of that side. The slightest touch of the integument or an attempt at taking food brought on a paroxysm of increased pain, with twitching of the left facial muscles. The pain was more or less constant during the intervals of freedom from twitching, but when the pain and "tic" were conjoined the agony was painful to witness.

On March 20, 1884, I performed the following modification of the operation first devised and practised by Carnochan, of New York: Ether having been administered, a curvilinear incision was made parallel to and slightly below the inferior orbital margin, from the inner to the outer angle of the eye. This was carried directly down to the bone and the flap dissected upward until the edge of the infra-orbital ridge was reached. The leash of nerves constituting the branches of the infra-orbital after it leaves the foramen was now dissected from the under surface of this flap. The tissues covering the anterior surface of the superior maxillary bone were next detached and drawn downward by a retractor, and there held by an assistant. A trephine five-eighths of an inch in diameter was now applied in such a way that its point punctured the antrum of Highmore upon a vertical line running directly downward from the infra-orbital foramen, while its

rim or cutting edge slightly overlapped the foramen itself. By following this rule in the application of the trephine, it was found that all the available space possible was gained for operating. The removal of a button of bone from the anterior wall of the antrum having been accomplished, the patient was lifted from the operating table to a chair and placed in a sitting position with his back to a window; a reflecting mirror upon my forehead furnished the necessary light for the performance of the rest of the operation. The posterior wall of the antrum was now perforated by a trephine half an inch in diameter. In using this latter the centre-pin was withdrawn prior to its application, the converging surfaces of the cavity being found sufficient to support the instrument, and the danger of unwittingly thrusting the pin into the spheno-maxillary fossa avoided.

Upon perforating the posterior wall of the antrum, the spheno-maxillary fossa, together with its contents, was brought into view. With a small chisel the infra-orbital canal was opened and broken down so as to release the nerve and its accompanying artery, and tracing the nerve rapidly back to the point where it enters the orbit, with a pair of small double-curved scissors section of the trunk of the superior maxillary nerve was made beyond the point where it joins the ganglion of Meckel. The orbital, spheno-palatine, and inferior dental branches being divided, the ganglion and nerve-trunk were together drawn out. A smart hæmorrhage from that portion of the internal maxillary artery contained in the spheno-maxillary fossa now occurred, but it was readily controlled by a small piece of compressed sponge attached to a stout thread and crowded into the fossa. This latter was left in position in order to guard against the bleeding. The parts were irrigated with Koch's solution, the external wound drawn together by a few horse-hair sutures, an opening being left at the most dependent angle for drainage, as well as to facilitate the withdrawal of the compressed sponge, and a dressing of naphthalinated cotton applied.

The next day the sponge was removed. Daily irrigations with Koch's solution and dressing with naphthalinated cotton were practised. The wound healed slowly, owing to the impracticability of keeping it in an aseptic condition, and a

month elapsed before it had entirely closed. For the first few hours after the operation the patient complained of wandering pains over the whole left side of the face, but the "tic" had disappeared entirely, and in twenty-four hours he expressed himself as being perfectly free from pain; this improvement continued, and no recurrence of the pain took place. A slight depression exists at the site of removal of the button of bone.

Remarks.—Fortunately, as a matter of clinical experience, intractable and persistent facial neuralgia requiring operative measures for its relief, is comparatively rare. It is a matter of congratulation, likewise, that it occurs, in the vast majority of cases, in nerves purely sensory, admitting of neurotomy or neurectomy without destruction of important functions. There can be no question as to the propriety of operating in these desperate cases, for a sufficiently large number are on record in which relief has been afforded to attest the value of the proceeding. In the choice of operation preference should always be given to neurectomy rather than to neurotomy, for the reason that experience proves that almost invariably the pain returns after the latter procedure, and even in some instances has been aggravated after a lapse of time, owing probably to the nerve becoming involved in the cicatrix at the site of operation. On the other hand, neurectomy gives a relief more or less decided and lasting.

As to the origin of these severe forms of neuralgia of the facial nerves, I can offer but little; nor can it be said that a positive opinion can be advanced in a given case as to whether the neuralgia is of central or peripheral origin. Fortunately, however, either variety is benefited, though not equally so, by neurectomy. In the central variety, there can be no doubt that the paroxysms of severe pain are induced by the application of stimuli to the periphery, and that a removal of the nerve-trunk and its branches as far as practicable destroys the medium by means of which these stimuli are conducted centripetally. The suspension of the excitability of the nerve-centre, even though temporarily, is of benefit by fulfilling the first indication in the treatment, namely, rest and freedom from irritation. Further, the reflected or irradiated pains, of themselves sources of much suffering, are relieved by quieting the central excitability.

Where the neuralgia is indubitably of peripheral origin, as, for instance, in those cases where a portion of a nerve-trunk or its branches are involved in a cicatrix, or a neuroma has developed upon the same, a cure may be confidently promised if neurectomy be resorted to. Here removal of the nerve-trunk as far away from the original point of irritation as is practicable, is advised. Every effort should be made to promote rapid healing after operation, for the reason that the greater the amount of connective-tissue proliferation and formation of cicatricial tissue about the nerve-stump, the greater the chance of the developing therein of nerve-fibres these communicating with or springing from the nerve-stump, and subsequently dragging upon the latter and becoming a renewed source of irritation. The antiseptic method of operating is, therefore, to be commended as being most likely to accomplish the best possible results.—*New York Medical Record.*

LOCAL HYPERESTHESIA OF THE GUMS.

By J. SMITH DODGE, JR., M.D., D.D.S., New York, N.Y.

Three cases of this trouble have come under my treatment within the last two years, with such variety of detail as makes the group very instructive ; and the condition is so perplexing until its nature is recognised, and yet so easily relieved after diagnosis, that it seems worth while to put these cases on record.

I. Miss F., of middle age and general good health, having neglected her mouth and lost all her teeth by alveolar disease had been wearing full rubber sets between one and two years. The dentures had been worn with comfort, except that lately the upper had become loose through absorption of the ridge. A new upper plate was therefore made of gold of course fitting snugly everywhere. This had been worn two or three months, with some general complaint that the old set felt the easier if it would but stay up, when there gradually developed a tenderness of the right molar region accompanied by neuralgic pains about the temple and ear. The attacks were brought on by wearing the gold plate, and always passed away when the mouth was left empty or the

rubber set was worn. There was not the slightest appearance of inflammation in the gum, nor any noticeable tenderness on pressure. Having never studied this condition, I felt sure there was some submucous disease, and explored again and again for any fistula which might lead to diseased bone or a fragment of tooth. Nothing in the least abnormal could be detected. After a number of weeks had passed without any change in the condition, as the patient lived out of town, it became necessary to bring the matter to some conclusion, and one day I painted the entire right upper molar region with tincture of iodine, showing the patient's sister how it was done and directing her to repeat the application several times at intervals of a few days. This was over a year ago, and the case has not been brought to me since. I recently heard from the sister that the trouble soon ceased after the iodine was applied, and the gold plate is now worn with comfort.

II. A physician asked me to see a patient of his who had trouble with his teeth. I found Mr. C., perhaps sixty-five, finely developed and with nearly all of a magnificent set of teeth. He was under treatment for diabetes, and had a good deal of neuralgia, which the physician had been successfully treating with codeine. But quite recently there had developed an excessive sensitiveness about the left lower molars, so that he could not chew hard food nor take either hot or cold drinks. He was disposed to connect the dental trouble with an ear-ache, which came, he said, from some exposure to cold air; but the ear-ache was irregular while the dental sensitiveness was constant. As I went to examine the mouth the patient begged me not to touch the gums about the left lower molars. The first bicuspid was wanting, the second bicuspid and three molars were absolutely perfect (except that one had a small crown filling) and stood so that the approximal surfaces could be perfectly examined. The appearance of the surrounding parts was equally good—no tartar, no marked recession of gums, no pockets, no inflammation. The only symptom was an intense hyperesthesia of the mucous surface, intolerant of the lightest touch of the finger. There was absolutely no soreness of the teeth. No relief had come

from codeine, and the condition was very distressing. I advised the doctor to paint the gum with the usual dental mixture of iodine and aconite. The result was an attack of furious pain, which the patient described to me afterwards in very emphatic language, but when this had passed away the original trouble was at an end. I believe a second application was made soon after, but eight or nine months later I was told that the patient had no more trouble with the teeth.

III. Mr. C., aged seventy-four, but in good health and active, had been wearing for several years an upper rubber plate having a partial lining of gold along the ridge. The fit was still good. Last summer he called to complain of a pain which seemed to originate in the right molar region, and which he attributed to a slight irregularity of shape in the plate at that point. As this corresponded with the surface of the mouth, and neither had changed in some years, I dismissed that cause, and looked further. He described the pain as brought on by wearing the plate, but particularly by mastication, so that he said his jaw was sore. But pressure with the finger gave no pain, nor was there the least appearance of inflammation. I searched carefully at two sittings for any trace of dead bone or tooth, but nothing could be found. The pain was always relieved by going without the plate, and always produced by any attempt to eat with it. Besides the local "soreness" there was a feeling of distress about the maxillary articulation of the same side, with pain in the temple and ear. As soon as I was satisfied that this case was like the two preceding, I began the application of iodine and aconite, which gave no pain whatever. The patient's occupation did not permit him to come as often as I wished, but within the next fortnight I made three applications with gradually advancing relief. At somebody's suggestion he had also put alcohol fomentations on the cheek. About a month after the first call (having been absent the last fortnight) he told me the trouble was pretty much gone, adding that now he could "eat anything." This may be two months ago, and I have not seen him since.

Of course it does not explain these cases to give them a name, and I do not pretend to guess what the real centre of disturbance may have been. But it is useful to know that

a disorder so distressing, with symptoms which seem to prove some serious local lesion, is after all, only functional, and can be relieved so easily and promptly as has been described.—*Dentul Cosmos.*

Dental News.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN
ORDINARY MONTHLY MEETING, held Monday, Dec. 1st, 1884.
J. S. TURNER, M.R.C.S., L.D.S., Eng., President in the Chair.

(*Concluded from page 45*).

Mr. D. Hepburn said he had examined the boy and took a model of his mouth when he was about seven years old, he had then six teeth in the lower jaw but none in the upper. He examined at the same time the mouth of the boy's father, who was equally hairy and practically edentulous, and was much struck with the horny condition of the mucous membrane of the upper jaw. The gums were so hard that he seemed to have no difficulty in masticating the vegetable diet on which he lived.

Mr. Gaddes remarked that the fact that the boy had certain temporary teeth, but that there were no signs of any of the permanent set seemed to him to be an interesting feature in the case. It was said that the temporary teeth were to be considered as being additional to the permanent series; here, however, the temporary teeth were present, but there was an absence of any sign of their successors. This particular case, therefore, might perhaps afford some ground for argument against the statement to which he had referred.

Mr. Coffin said that in the case of the boy the gums were not at all indurated.

Dr. St. George Elliott exhibited and presented to the Museum three very curious and interesting specimens of Japanese artificial teeth. The Japanese were the only nation outside the limits of Western civilisation who understood the fitting of artificial teeth. They had derived most of their scientific and technical knowledge from the Chinese, but in this matter they were in advance of their teachers, for the Chinese had no idea of fitting an artificial denture.

They could indeed carve a row of incisors and fasten them to the teeth on either side ; but these productions were only intended for ornament, not for use, whilst those of Japanese manufacture were thoroughly efficient. Thus a Japanese physician who came to him for a set of teeth, remarked that though the foreign teeth were more natural in appearance, those of home manufacture were quite as good from a practical point of view, and in proof of this he took up a piece of hard "rock candy," and crunched it between his false teeth. These dentures were made on wooden bases ; the front teeth were made from quartz pebbles ground down, but the process of mastication was performed by copper nails, which occupied the place of the molars. It was an interesting fact, also, that the fixing of dentures by means of suction had been known to the Japanese for at least two hundred years. The base plates were carved by hand, the process being as follows. An impression of the mouth was taken in wax, and from this a model was made, also in wax. The model was then coated all over with red pigment, and the plate, after being roughly shaped, was placed on the model thus coloured. The red patches on the under surface of the plate was then carefully cut away, until at last it fitted the model exactly. It was then tried in the mouth in the same way, the gums being covered with the pigment, and any inaccuracy readily detected. Dr. Elliott added that he had himself made use of this plan occasionally, and had found it of service in detecting an obscure misfit. One of the dentures he handed round had been in use for fifteen years.

The President said he could remember the time when this style of dentistry was not uncommon. Gold plates were used in some cases, but the majority were made of bone, and were carved and fitted by hand labour. Wood, however, was only used for the juniors to learn on. He had a vivid recollection of this troublesome process, the most important point being always to place the block on the model in exactly the same position.

Mr. Weiss said wood was certainly used as a base in some cases in former days, and he believed it was not very unusual amongst poor patients. He remembered a ship's carpenter, a very ingenious man, who had voyaged with Captain

Scoresby, who made his father a set of teeth on wood, and was very proud of his work.

Mr. S. J. Hutchinson read the following communication from Mr. Oakley Coles, on the use of Cocaine in dental surgery :—

“A week ago I had placed at my disposal by Mr. Martindale a small quantity of the new drug cocaine dissolved in oil of cloves. The experiments I have been able to make confirm the evidence which had already been given as to its remarkable anæsthetic properties. One application of a 20 per cent. solution will allay sensitiveness in the dentine : two applications at an interval of five minutes will suspend for a time the sensibility of an exposed pulp.

It has been stated that, if properly applied and used in sufficient quantity and of adequate strength, cocaine will enable the operator to remove a tooth without pain. Of this I have at present no experience, but there can be no doubt as to its utility in dental surgery. The only point to be decided is in reference to the form in which it may be most conveniently used. It is soluble in water, glycerine, the essential oils, and chloroform, but not in ether. It is quite possible that it may be most efficacious in the cavity of a tooth if used in powder or in the solid crystalline form.

“It promises, however, to be so useful in many forms, that our efforts must be directed to its application in a variety of cases, as well as in a variety of forms. Time and experience will doubtless indicate the best vehicle for its exhibition, if we once ascertain the limits of its power as a local anæsthetic.”

Mr. Hutchinson added, that it was no doubt known to most of those present, that this drug had been used with great success in ophthalmic practice, and from this it was inferred that it would also prove useful in dental surgery. His own experience of its effects was limited ; he found, however, that a 20 per cent. solution removed the sensitiveness of an exposed pulp. Perhaps some of the members present might be able to give more information on the subject. He particularly wished to know if anyone had used the hydrochlorate of cocaine as a local anæsthetic for tooth extraction.

Mr. Woodruff said he had tried a 4 per cent. solution as an application to sensitive dentine, but had found it useless.

Mr. Storer Bennett said he had begun with a 4 per cent. solution. He dressed a cavity the surface of which was formed of hard dentine with this solution, and left it for half-

an-hour, but it had apparently produced no effect on the sensibility. Next he applied it in the same way to soft dentine, but with no better result. Then he tried 10 per cent. mixture with vaseline, and left it sealed up for forty-eight hours, but with little benefit to the patient. Lastly he applied the 10 per cent. ointment, and left it for a week; this certainly had a better effect, and the patient said "the tooth felt numbed." He was going to try a 20 per cent. strength of the muriate, which he believed had been found much more efficacious than the uncombined cocaine. It was also more expensive, cocaine being 10d. a grain, and the muriate 2s. 6d. a grain. He would suggest that a small committee be appointed to investigate the properties of this drug, as regards its effects on the dental organs, and to report upon them.

Mr. Walter Coffin said he was trying to get an oleate of cocaine made, as this had been found to be a very good way of using alkaloids generally.

Mr. W. Hern said he had lately extracted a lower wisdom tooth for an ophthalmic surgeon; the operation was followed by very acute pain in all three divisions of the fifth nerve. In the hope of relieving this he inserted some drops of a 4 per cent. solution of cocaine into the socket, but it had no effect on the pain.

The President remarked that the drug appeared to be quite worthy of careful investigation, but he thought it was scarcely worth while to appoint a committee for this purpose. In all probability a great many of the members would be trying it, and he would rather suggest that the whole Society should form itself into a committee for the purpose of this investigation. He would now call upon Mr. Sutton to read his paper on "Comparative Dental Pathology."

Correspondence.

TOOTH STOPPING AT GENERAL HOSPITALS.

To the Editor of "The British Journal of Dental Science."

SIR,—One would think after reading Mr. Hume's letter that to attempt to fill teeth at a General Hospital would incur expenses that would never be got over. This I think is rather far-fetched, as I do not see that a Dental department in any charitable institution need be furnished like one's private office; and I think that a Dental Surgeon might manage to save a few teeth with about half a dozen well-

selected excavators and a few ounces of Sullivan's amalgam, without a specially furnished operating room. Perhaps Mr. Hume will be surprised when I say I occasionally see *gold* fillings that were put in about eight years ago, while the patient sat in an ordinary arm-chair, and the whole of the instruments used by the operator did not cost a sovereign, this shows what can be done where the hands are willing.

Mr. Hume then goes on to say that no Dentist in ordinary practice can afford the time necessary to introduce stoppings into hospital practice. This I think is a mistake, for if men who cannot afford the time would give way to those who can, then the poor patients instead of having their teeth dragged out without a second thought, might get some real benefit from the institutions established for their especial use. This last argument of Mr. Hume's will not hold good at all, for the simple reason that a man who gets one appointment seeks and generally obtains two or three others; this to my mind is another example of the dog in the manger.

I have been anxious for some time to see this subject ventilated, and I think it is a shame for a man to hold all appointment when he cannot do his duty to the office, and either has to send a boy out of the workroom, or leave au (except the luncheons) to the dispenser. In my own town we have a dentist connected with our infirmary (I wish he may see this) and the average number of teeth extracted yearly amounts to over 100 complete sets, still the Dentist who holds that appointment holds others.

In conclusion I say that there are a few men who want all the honour without the necessary work, but I hope those who seek honours will be made to do the work, and made to do it well too.

Yours truly,
L. M.

THE DENTAL ETHICS OF MANCHESTER.

To the Editor of the "British Journal of Dental Science."

SIR,—Doubtless it is well known to the public that there has been a great deal of professional squabbling amongst the dentists of Manchester, for they were allowed to see a little of it at a meeting in the Mayor's parlour in February last. Certain gentlemen on that occasion wanted to establish a second Dental Hospital, and their excuses for so doing were that the Hospital which was then already in existence was not in connection with the Medical School of Owen's College. They were not successful in getting the support for a second

hospital, but were referred back to the Committee of the then existing hospital, with the view of making an amicable arrangement, which happily has taken place, and gave promise of everything being all that could be desired. But what do we find? The very thing that these gentlemen complained of in others they do *ten times worse* themselves directly they get into office, which shows how desirable it is to remove the beam in one's own eye, before troubling about the mote in one's brother's eye. The following facts give an illustration of my statement, as the undermentioned is an extract from this last week's *Lancet*;

"VICTORIA DENTAL HOSPITAL, MANCHESTER.—The dental specialists are still given to advertise very much. A handbill has reached us advertising the above Hospital, with all the surgeons' names on the back. This is not a commendable or professional procedure."

This is an illustration as Sir John Vesey puts it in the play *Money*, "That there is a large amount of humbug flying about in the world." Apologizing for troubling you with these remarks, I am,

Yours faithfully,
"HONORIS."

Manchester, December 14th. 1884.

To the Editor of "*The British Journal of Dental Science.*"

Sir,—Having seen an interesting account of Mr. Percy May's experiments of the action of cocaine as a local anæsthetic in dental practice, recorded in your journal, I wish to inform him and the members of our profession that the strength of the solution should be forty per cent. and the best solvent is oil of cloves for dental purposes.

Your obedient servant,
E. Gregory, M.D., D.D.S., L.D.S.I.

Cheltenham.

APPOINTMENTS.

Mr. John Trude Fripp, L.D.S., R.C.S.I., has been appointed one of the Dental Surgeons to the London City Mission.

Mr. John Ackery, M.R.C.S., L.D.S., appointed Assistant Dental Surgeon to St. Bartholomew's Hospital.

Mr. W. T. Elliott, L.D.S., Ed. and Dubl., F.C.S., appointed Assistant Dental Surgeon to Birmingham Dental Hospital.

Mr. Edward Latchmore, has been appointed Demonstrator to the Dental Hospital of London.

Mr. Alfred S. Mackrell, M.R.C.S., L.R.C.P., Ed., has been appointed Assistant Dental Surgeon to St. Bartholomew's Hospital.

Mr. Henry J. Moxon, L.D.S., Lond., has been appointed Dental Surgeon to the North Surrey District Schools Anerley.

VACANCIES.

OWENS' COLLEGE, MANCHESTER.—Lecturer in Dental Mechanics; and Lecturer in Dental Metallurgy. Application, with testimonials by January 31st.

MONTHLY REPORT OF CASES TREATED AT THE DENTAL HOSPITAL OF LONDON.

FROM DECEMBER 1st TO DECEMBER 31st.

Extractions	{ Children under 14	308
"	{ Adults	814
"	{ Under Nitrous Oxide	339
Gold Stoppings	. . . . .	206
White Foil ditto	. . . . .	11
Plastic ditto	. . . . .	530
Irregularities of the Teeth	. . . . .	145
Miscellaneous Cases	. . . . .	227
Advice	. . . . .	110

TOTAL 2690

S. C. BUCKLAND, House Surgeon.

DENTAL HOSPITAL REPORTS. NATIONAL DENTAL HOSPITAL.

MONTHLY STATEMENT OF OPERATIONS FROM DEC. 1st. TO DEC. 31st.

Number of patients attended 1330

Extractions	{ Children under 14	296
"	{ Adults	885
"	{ Under Nitrous Oxide	340
Gold stoppings	. . . . .	46
Sheets of Gold used independent of Pellets		
Other Stoppings	. . . . .	422
Advice and Scaling	. . . . .	236
Irregularities of the Teeth	. . . . .	106
Miscellaneous	. . . . .	100

TOTAL 2431

ISIDORE FREDERICK PRAGER, House Surgeon.

DENTAL HOSPITAL OF EXETER. BEDFORD CIRCUS.

QUARTERLY REPORT OF CASES, OCTOBER 1st, TO OCTOBER 31st, 1884.

Extractions	{ Children under 14	244
" "	{ Adults	630
" "	{ Under Nitrous Oxide	80
Stoppings	{ With Gold	8
"	{ " White Foil	8
"	{ " Plastic Material	209
Miscellaneous	{ Irregularities of the Teeth, Scaling, &c.	140

TOTAL 1319

HENRY B. MASON' Hon. Sec.

British Journal of Dental Science.

No. 409. LONDON, FEBRUARY 1, 1885. VOL. XXVIII.

TREATMENT AND FILLING OF THE NERVE CANALS IN TEETH.

By JOHN STIRLING, L.D.S., Eng.*

We are gradually progressing in the proper treatment of aching teeth. It is not very many years since the filling of roots was an operation we only heard mentioned, and never saw accomplished, and when it was the almost universal practice to fill teeth over a devitalised nerve, without any attempt to remove it. Co-existent with that was the now old-fashioned operation of rhizodontophry. We have not yet arrived at perfection in the treatment of roots, but we have improved very much upon that ; which, I hope, will be shown in the discussion of the subject here to-night.

In the first place, I will consider the treatment of the teeth preparatory to filling their roots, and I will take the simplest and easiest of cases first—that is, devitalising and extirpating the nerves of the teeth.

In destroying a tooth pulp, when arsenic is employed, it should not be used as we get it from the chemist's shop, but should be triturated in a small mortar, moistened with water, from half-an-hour to an hour, and I prefer to use it with nothing but carbolic acid added to it. I usually leave the extirpating of the pulp till about four weeks after applying arsenic. The dressing is removed after twenty-four or forty-eight hours, and the pulp chamber well opened into, cutting out at the same time the bulbous portion of the pulp, after which it may safely, or rather advantageously, be left alone for a month or more.

If any attempt be made to remove the nerve on the same day, or within a few days, of removing the dressing, it must in most cases cause considerable pain to the patient. At the end of four weeks the pulp should be cleared out of the canals.

* A paper read before the Odonto-Chirurgical Society of Scotland.

I use these instruments as nerve extractors. You will see they are round, and slightly barbed or roughened, with a sharp sculptor.

If, when clearing out the nerve, there is found to be still some vitality at the far end of the canals, drenching it well with carbolic acid, and careful manipulating with the nerve extractor, will get it out painlessly. Where there has been little or no putrefaction of the pulp further than extirpation of the pulp, the canals require no preparation or treatment. I very rarely open a canal with broach or drill to the apex of the root. The canals may be filled immediately after removing the nerve.

I have not had any experience in treating a devitalised nerve with tannic acid, and then extracting it entire, but if that can be done painlessly, it is to be commended. Such a tooth could be finished in two or three days from the time its treatment was commenced. In upper front teeth, after devitalising the nerve, when I put in a temporary stopping, I often, at the end of a month, remove that nerve entire, with one draw of the instrument, without pain to the patient. But if there has been the slightest gangrene of the nerve, a temporary stopping is inadmissible; the cavity must be left open.

Where I find inflammation of a nerve, caused perhaps by a stopping being too near to it, if it be at all severe, or especially if it has extended to the periosteum, I devitalise and eradicate the nerve in the manner which I have just described. I have no faith in capping such a nerve; an accidental exposure, of course, I always cap, but any tooth pulp that has once been very decidedly inflamed, and has once given severe toothache, will never return to its normal state; cap and stop with non-conducting material as you will, the pulp will always remain in a chronic state of inflammation. The capping may stop ordinary toothache, but the tooth will be always sensitive to thermal changes, causing occasional discomfort to the patient, which may go on from a few weeks to a year, or longer; finally that passes away, the tooth remains quiet for a short time, and the patient can take cold water freely without hurting it. But it is only preparing for more serious trouble, which comes soon or late, but generally soon, and

the stopping has to be removed, and the capping ignominiously turned out.

There are cases where the nerve seems to shrivel and dry up, leaving comparatively clean canals, and which give little or no further trouble. But these cases are exceptional and usually exceptional not in the case of the tooth, but of the patient, whose teeth pulps generally all follow the same course.

But we have a very different state of things where we find a tooth, in the canals of which putrefaction has been going on for some time, causing periodontitis or alveolar abscess. The most part of the work of stopping that tooth will be in cleaning the nerve canals, and bringing the periodontium into a healthy condition. In a case of that kind, where there is, say, acute periostitis, caused by unclean nerve canals, we all know the symptoms presented, and can almost tell it at a glance. The first thing to do, is to open the pulp cavity well up. If the tooth is very painful to the touch of the finger, we may not be able to do this effectually. But if we are to give relief from toothache, it must be opened enough to allow us to pass one of these instruments a short distance into, at least, one of the canals; and we can generally manage that with a sharp excavator, a gentle touch, and a good light. When, however, we can cut freely without hurting, we are able to do a little cleaning to the canals, but it must be done carefully, and they must be wiped out, not washed out. A syringe and water at this time should not be used, because to employ it with effect, it must be used with force, and to force water into the canals, would probably drive through their apical foramina something septic or mephitic, that would rather increase the inflammation that we are trying to subdue.

I usually put a little bicarbonate of soda into the cavity of the tooth, moistened with one drop of water, pass an instrument into the canal, and work it a few times up and down and against its sides, and then let the patient rinse the mouth.

If that fails to give relief, try carbolic acid, with a very little iodoform in it, pushed gently into the canals. If part of the nerve is still alive and highly inflamed, iodoform with

carbolic acid, and not arsenic, should be used. Failing to give any immediate relief, the patient may be directed to hold cold water in the mouth five or six times during the day for a quarter of an hour each time. A saline purgative is also a good thing in such a case. In any case, I never recommend the extraction of a tooth where there is acute periostitis, before suppuration has taken place, because the tooth (though sometimes a little loose, from swelling of the periosteum) then clings harder to its socket; it would be more readily broken in the attempt to extract it, the operation would be more painful; and when successfully extracted, pain would probably continue in the socket for some time after.

Let us suppose, now, that the disease, before we saw it, had gone a stage farther, and suppuration had taken place. If it were a lower molar tooth, with the nerve canals difficult of access, and especially if the patient had reached the shady side of middle age, I would recommend its extraction. But if it were a young tooth, with the canals wide, and easy of access, or if it were any other tooth than a lower molar, I would then, after having opened up the pulp cavity, promote suppuration instead of trying to prevent or subdue it; for which I recommend hot fomentations—a cloth squeezed out of hot water, and held to the face opposite the tooth—or tincture of aconite to the gum; but that should be used with discrimination, as to *when* to use it, or its application may be worse than useless. In the treatment of periostitis, it should be used only when suppuration is probable or inevitable. The primary stage of periostitis seems to me to require treatment of a very opposite kind.

To a tooth in this state, as also before suppuration has taken place, we should do no more at the first sitting than endeavour to relieve the pain. The proper cleaning of the canals should not be attempted for a day or two after, or for three or four days, if there is any swelling of the face and difficulty in opening the mouth freely, and the patient should be directed to pick the food out of the cavity in the tooth after each meal. I have never found much good from a leech to the gum at any stage of inflammation. Lancing, when it is necessary, I have found do more good, and it is more easily and quickly done. Apply chloroform to the gum (or the

new anæsthetic, cocaine), and it can be lanced freely with but little pain to the patient.

Allow me to digress for a moment, and give very briefly my experience of cocaine. I used a 20 per cent. solution of the hydrochlorate, and for lancing the gum or for extracting teeth I have found it no better than chloroform applied to the gum. The anæsthesia seems to be very superficial, but, nevertheless, decided. For excavating sensitive dentine, it is to be highly commended. For that purpose I have been using for some time the oxide of calcium, left in tooth till the following day, and have been much pleased with it; but here we have an agent superior, which permits the completion of the excavating at the first sitting.

The extraction of teeth, in order to fill the canals, and then replanting them, I cannot discuss. I never practised it, and I never agreed with it in theory.

We will now consider the cleaning and preparation *for filling of the nerve canals*, which should be done as soon as the tooth is quite free from pain. The cavity of decay should be so shaped, that the canals be made easy of access. If the decay has not made it so, then it must be shaped with chisel, file, and burring engine, and it is often necessary to cut away a great part of the crown of the tooth.

In large postero-approximal cavities of second bicuspidæ, and all the molars, the cavity should be opened up to nearly the middle of the crown, making it resemble a compound one. Most of this would be done with the chisel, and finished shows the shape of cavity I am describing. With *small* postero-approximal cavities, it is often better to open through with the file, putting it between the teeth and holding it while filing at an obtuse angle. That is making something like a broad wedged-shaped opening between the teeth. This lower molar the crown of the tooth. Sometimes, in first molars, and very often in bicuspidæ, we can get sufficiently good access to the cavity and canals by cutting away the postero-buccal surface of the tooth, as is shown in this upper molar. But where we have to fill canals with the aid of the mouth mirror, it is usually better to cut both buccal and lingual sides. Having enlarged the cavity of decay, we then open up the pulp chamber with burring engine and excavator, and then

enlarge the orifices of the canals, making a kind of trumpet-mouth shape to each of them. In molar teeth, with a buccal cavity small, and near the gum, the only thing we can do is to make a crown cavity with the burring engine, as shown in this lower molar. With a drill such as I now exhibit, I make two, three, or four holes through the crown to the pulp chamber, and then open up with a burr head, usually a long burr drill. I consider a case like this a difficult one, and if the patient were over middle age I might hesitate to attempt the treatment of it, but in young teeth it can be successfully accomplished.

You have heard the saying "keep your powder dry." The equivalent of that to us should be "keep your instruments sharp and well tempered." I am certain there are cases of failure when there need not be, because that is not attended to. To clean the canals, I usually begin with bicarbonate of soda. I fill the cavity of decay with it, add one drop of water from a syringe, and with one of these canal needles, slightly roughened, work it up and down and against the sides of the canals, then syringe out with warm water. If the canals are very foul, I do that twice or more. I then put one crystal of permanganate of potassium in the cavity of decay, add one drop of water, and work it into the canals as I did the soda, then syringe well out. Care must be taken not to force any of it through the apical foramen, because if any go through it will give pain, lasting sometimes two or three hours. I then fill the canals with carbolic acid, forcing it well to the very ends in the manner which I will now describe. Saturate well with carbolic acid a small pellet of cotton wool, put it in the cavity of decay, pass a *smooth* needle by the side of the wool into the canal and work it up and down. The needle, if it is of a proper thickness, acts as a piston, and the liquid can be forced to the very ends of the canals. I usually begin with a thick needle and finish with one fine enough to force the liquid to the very end, and if a little go through the foramen so much the better. When applying it to the roots of front teeth where the crown has been lost by decay, or has been cut off preparatory to inserting artificial teeth, having no cavity to hold the cotton wool, I wrap a very slight shred of wool or floss silk round a

slightly roughened needle and keep dipping it in the acid, and forcing it in the canal till it is filled. Having cleaned the canals, and applied carbolic acid, that is enough for the second visit. At the third visit, if the canals are clean and the tooth seems well, I use bicarbonate of soda and carbolic acid as before, and then fill the root and the tooth. Permanganate of potassium should not be used at the last visit, because it discolours the tooth, and if there is still any odour from the tooth, it should not be filled, but should be treated with soda and the permanganate as before, finally filling the canals with soda and closing up with wax or cotton wool, with instructions to the patient to remove the wool if the tooth should ache. My usual mode of testing the cleanliness of a canal is to pass one of these needles into it, then withdraw the needle and smell it. Whether the putrid matter enters the dentinal tubules to any great extent I do not know, but occasionally we find a tooth so permeated with this foul odour that it requires more time to purify it, and it is sometimes at a fourth or even a fifth visit that I fill such a tooth, and as long as there is the slightest trace of pus in the canals, or fistulous opening on the gum or gumboil, the treatment should be continued with soda and carbolic acid, using the latter very freely. Sometimes about one-third of a nerve remains alive at the end of a root, very tenacious of its vitality, and requiring patience to overcome it, but persistent acupuncture with carbolic acid will do it. I have not yet tried cocaine for this purpose, but would hope for good results from it.

We hear of some operators drilling through gum and bone and scraping off a pus forming sac from the end of a root, but such treatment seems to me a little too heroic and unnecessary. Excepting in aged teeth carbolic acid can usually be forced through the apical foramen, and I feel assured that when persistently applied, a very small quantity at a time of the liquid, full strength, is enough to destroy the sac or it brings it into a state of quiescence. When it is possible the foramen should be slightly enlarged where there is a persistent discharge of pus. The treatment to be quite successful should be continuous, and when we have a patient who does not come at the appointed times, or comes only when

the tooth has begun to ache again, it is better to advise the extraction of the tooth. I have got myself into disgrace by attempting to treat such a tooth for such a patient.

I fill roots always with oxychloride of zinc and nothing else, and I do not intend to discuss the use of any other material for that purpose. Suffice it to say that some years ago I used cotton wool, gutta percha, gold, amalgam, &c., but I have been most successful with oxychloride of zinc. The best oxychloride I have found for the purpose is Guillois' cement, because it is slow setting. The method of filling is to mix it a very little thicker than cream, put it in the cavity of decay, introduce a thick needle into the canal, and pump the oxychloride as far as the thick needle will carry it, then use a thin needle to carry it to the end of the canal. It should be well and freely forced to the very end, and as soon as it *begins* to set it should be left alone till hard. Then scrape the oxychloride out of the cavity of the tooth, and fill with whatever material is most suitable for it. In filling roots where the whole of the crown is gone, I fill two-thirds with oxychloride and the remaining third with amalgam. In filling the canals of postero-approximal cavities in molars, where it has to be done with the mouth-mirror, if more time is wanted in working the oxychloride, it can be gained by adding about 20 per cent. of water to the liquid, which makes it set slower.

It has been said that, in filling canals with oxychloride of zinc, we should be careful not to force it through the foramina, but there can be no fear of harm from that when we do not enlarge them. They are so small that very little can go through, even though there were a vacuum in the socket to receive it, which there is not. Besides, it is a liquid we are using and not a solid substance, which might be forced into the socket with pressure. Further, I maintain that a little forced through—if it be only a little—it will do no harm beyond giving slight pain for half-an-hour or an hour.

Dr. Marshall Webb has said (Notes on Operative Dentistry, 1883) we should enlarge the canal, when possible, up to the foramen, and then, before filling with oxychloride of zinc, close the foramen with gold foil. It seems to me that in doing so, we would run a risk of having the gold foil

pressed either too far or not far enough, either of which two conditions would be dangerous to the success of the operation.

Dr. J. Foster Flagg says (Dental Pathology and Therapeutics, 1873) that if one-third of a root be left unfilled, sooner or later it will give trouble. I think that is true of some roots only. I would not like to leave an upper incisor root only two-thirds filled, but I have done so often with the buccal roots of upper molars, and I know that many of these teeth have been all right for several years.

I think it is not good practice to fill roots with cotton-wool and creosote, or carbolic acid. I remember three cases of periostitis, quite lately, where I found, on removing the stopping, the canals filled with cotton, and smelling as strongly of creosote as if newly put in. Although the roots in these cases were apparently clean, trouble had been set up, from a few weeks to a few months, after filling.

I will give you here, in their order, cavities of decay in teeth, which I find easy or difficult of access to the canals beginning with the easiest :—

Upper front teeth—approximal and lingual cavities.

Upper and lower bicuspid and lower canines—approximal and crown cavities.

Upper front teeth—labial cavities.

Lower incisors—approximal cavities.

Upper molars—crown and antero-approximal cavities.

Lower molars—do.

Upper molars—postero-approximal cavities.

Lower molars—do.

Upper and lower molars—buccal and lingual cavities.

One word about temporary teeth. The difficulty in treating the roots of temporary teeth consists only in the age of the patient. The same teeth in the mouth of an adult could be easily treated. Appointments are also more likely to be neglected—very often after the first visit—when toothache has been relieved, we see no more of the patient till toothache has returned, and the tooth probably in a much worse state than before. Thickening of the membrane and congestion at the root seems to come on sooner than with permanent teeth, probably because the foramina are often wide.

I only attempt to treat those in which the canals are easy of access. We can hardly do more for a patient so young, and usually restless, and little value is generally put on a tooth which is to fall out in a short time. When time for shedding arrives, absorption of the root does not take place as when in the normal state, and it is well to caution the patient's friends of that. If permanganate of potassium be used, it should be done with great care.

We cannot be successful in every case. I reckon my failures at about 10 or 15 per cent., and here is one that occurred to me three weeks ago. It is a lower bicuspid, with two distinct canals, and the lingual one, as will be seen, is filled to fully two-thirds of its length with secondary dentine, which was probably the cause of the failure.

Secondary dentine, and pulp stones, especially the former, are sometimes a formidable barrier to the opening of a nerve canal. Excepting in straight roots, easily got at with a drill, when a canal is filled to nearly half of its length with secondary dentine, nothing can be done, and we have only to hope it will not cause any trouble.

ORIGINAL SUGGESTIONS FOR THE CONSTRUCTION OF ARTIFICIAL CROWNS AND BRIDGES.

BY DR. J. H. SPAULDING, HANOVER, GERMANY.*

The discussion of the merits and claims of artificial crown and bridge work is likely to have somewhat of a revolutionizing effect, in both the operative and mechanical branches of dentistry. While one section of dentists extol bridge work, others regard it with suspicion or worse.

For the claims and pretensions of the artificial crown work I have the highest respect and admiration, through the methods prescribed we may be able to save many teeth which have heretofore been sacrificed because we did not know exactly how to deal with them. Dr. J. L. Williams, of Hartford, Conn., has written excellently upon this subject. I shall not rehearse what he has said, but will only suggest the

* Abstract of a Paper Read before the American Dental Society of Europe at its Meeting at Vevey, Switzerland, 1884. This paper appeared in full in the *Independent Practitioner*.

methods of making the gold, and gold-and-porcelain crowns for molars and bicuspid, which I am using. My manner of making the incisor and cuspid crowns is the same as his, and is, no doubt, familiar to you all.

After preparing the root so that its diameter is nowhere greater than just at the free margin of the gum, I take a narrow strip of sheet lead or tin, of sufficient thickness to bend easily and remain in any position, and adjust it to the root just where I want my gold crown to fit most closely. Pressing with suitable burnishers into any irregularities, and bringing the ends squarely together, I have the exact length of the gold strip which must encircle the root. Using for this 22 k. gold of about 32 English standard gauge, I now cut it off and bend it with pliers to fit the irregularities, as I did the lead, and bring the ends squarely together and solder. All this takes perhaps thirty minutes. I now place my gold band upon the root, pushing it up as far as I intend it to go when finished, and take an impression with this ring in the position, remove the impression and replace the ring in proper position therein, and fill with plaster. I now have a model of the case with the gold ring upon the root I am crowning. I take also an impression of the opposite jaw to secure the articulation. With the models of both jaws, and the proper articulation, I can fit and shape my crown as I need, using strong resin wax to build up for occlusion with the opposing teeth.

When the proper shape is secured, take 24 k. gold, rolled very thin, say No. 38 or 40 English standard, and burnish over the outside of the wax, bringing the edges down outside the narrow gold ring. I now invest in plaster, and remove from the model, taking out all the wax from the inside, and flow solder over the entire surface of the inside of the crown. This stiffens the 24 k. gold, and makes it sufficiently thick to resist wear in use.

With a little polishing it is ready to put in position, and is of better shape than it is possible to secure in any other manner, save by swaging with dies, and all is done easily and quickly. If it is desirable to have a porcelain face and grinding surface, as is sometimes the case in bicuspid and first molars, I make my ring as before, only using a gold strip

as wide as the full length of the desired crown. I place this ring upon the root and take my impressions as above, making my models and securing the proper articulation. I now cut away from the buccal wall of the gold ring down to within a line of the gum margin, and select the proper porcelain molar or bicuspid, fit it into the ring, grinding the porcelain or bending the gold as may be necessary, until the fit is secured. I next place my ring in position in the mouth, driving it well up, and dry off the end of the root, using the rubber dam if possible, and fill the band with Poulson's cement, and press my porcelain face into position. Removing the excess of cement, and allowing, of course, a few minutes for it to harden, my crown is finished. In cases where necessary, I always place a headed pin in the root canal, either with cement or amalgam, before placing the crown in position; the head of the pin is allowed to stick out, to be grasped by the cement with which the crown is filled.

No objection which has been urged against the "bridge" by its opponents can have any application to the crowns as described above, or in the article of Dr. Williams. The root, if properly treated, is as safe as any tooth which has lost its vitality, and is thoroughly protected from further decay; and, if well done upon a reasonably good root, it will take care of itself for many years. There is also a large class of teeth which are wasted by abrasion and some forms of dry decay almost to the point of pulp exposure, and which are not amenable to treatment that will conserve their vitality by any method of filling, and which can only be securely protected by capping.

To meet the requirements in cases where the permanent bridge is not practicable, I beg to suggest some methods which can be utilized with much comfort and satisfaction to the patient. A case commonly presenting is one where all the molars and second bicuspid of the lower jaw are gone, and is one for which it is always extremely difficult, and sometimes almost impossible, to make a plate that will set easily and remain in place, entirely dependent upon suction. If, as is frequently the case, there is decay in the first bicuspid, they are to be cut off and prepared as for the single crown. Take a sharp impression of these roots, and make

gold cap to fit the exposed end of each ; make a hollow cylinder of gold, and a pin to fit the cylinder. Now, after enlarging the nerve canals, place the caps in position and punch holes through the top to correspond with the nerve canal opening, and place the cylinders, cut to the proper length, through the opening in the cap into the canals ; fasten with resin wax, remove and solder. This done, place permanently in position upon the roots with cement (using, preferably, Poulson's or Rostaing's). Next place in the metal canals the pins already made to fit them, the ends projecting, and take an impression as for any ordinary plate. The pins will come away with the impression, and show exactly the position and length of the canals. Now place *upon these pins* cylinders of any metal most convenient (brass, lead, tin), and fill the impression with plaster for the model ; thus you have in the model the exact counterparts of the metal canals in the mouth. You now place the pins in these canals as you did in the canal, in the roots before taking the impression, allowing the ends to project as before, and proceed to make the plate as for any ordinary case. It is well to flatten, or roughen, or head the ends of the pins projecting from the canals in the model, so that the rubber—if rubber is used—will more firmly grasp and hold them. When your piece is finished it will set easily and steadily in the mouth, and is not readily moved about by the tongue or muscles, but it can be easily removed for cleansing, and the amount of plate material you need is reduced to the minimum. Another advantage is that the plate need not touch any of the natural teeth remaining in the mouth, thus preventing decay, which plates so often cause. Another case : molars and bicuspid gone, except wisdom teeth, which are badly decayed. Grind down the crowns of these teeth, shaping them properly, and make gold caps for both, and on the top of each solder a short, square pin, and when finished place in position upon the root with cement. Now take an impression and make up your denture in the usual way, allowing the material of which the plate is composed to extend over the gold crowns, fitting closely around the pins described above. The caps over the wisdom teeth serve a double purpose ; that of preserving these teeth and affording a support or fastening for the denture.

Another case shows the lower teeth all gone, except cuspids, which are either sound, or have good roots and in good condition. Extract all roots except cuspids; cut these off and proceed as before to make the gold caps with canals and pins, and place in position with cement, continuing exactly as described for the first case. When complete you have a lower denture entire, which stays where it is put in the mouth in spite of stubborn muscles and tongue, with the roots thoroughly protected and safe to support the denture for many years. If the pins should become a trifle loose by wear, they can be split and and opened a little so as to spring into the canals, thus holding more firmly. The cases I have cited are only those of the lower jaw, but the same principles apply with equal advantage to any such case on the upper, or any modification of these conditions upon either jaw. These suggestions may not be new to many of the members of your society, but they will, I am sure, be of some value to many operators in America, where the custom of extracting all teeth and roots preparatory to inserting the artificial denture has more generally obtained than in Germany. That such a practice is a thing of the past there are already hopeful signs, and the employment of the methods suggested herein is better adapted to the purse and skill of patients and operators in the ordinary walks of the profession, than the very expensive bridges requiring a high degree of skill in construction, while possessing some advantages over the latter.

THE BROMIDES IN DENTISTRY.*

By R. M. SANGER, D.D.S.

Mr. President and Gentlemen :—The subject which I have chosen for my paper is not exclusively dental, and my excuse for offering it must be that since it is a large part of the dentist's mission to relieve human suffering, everything which aids in any way that end, or comes in as an adjuvant in accomplishing that purpose, should be welcome to the dentist and found among his varied resources.

The peculiar effects of the bromides, as seen in medical

*A paper read before the New Jersey Dental Society at its Fourteenth Annual Meeting, Ashbury Park, July, 1884, and reported in the *Southern Dental Journal*.

practice, suggest several therapeutic uses in dentistry, and on these and the results of their use in my own practice, I base my claim to bring them before you. Though the effects of the bromides are doubtless well known to you all, it will serve my purpose and make my subject clearer to briefly review their action and bring out a few of the salient points. While they differ slightly in their action and effect, I take the bromide of potassium as fairly representative of the group, and the one most commonly used,

The minor points of solubility, taste, etc., I will pass over, simply remarking that in consequence of its ready solubility in water it is easily administered, while the taste is simply saline, and not highly disagreeable to any one.

It is more of the physiological effect that I wish to speak, and just here I will remark that we gain no aid in studying the effect of this medicine from its administration to the lower animals, as the results of a medicinal dose are very misleading, being to them a poison, while to man it is much milder, not a single case of acute poisoning having ever occurred. It is true that in large doses, long continued, certain effects are produced which might be classed as poisonous, but with these we have nothing to do, as my object is to show the use which can be made of a single dose. The immediate effects, physiologically considered, are :

- 1st. Depression of the heart's action.
- 2d. Diminished respiration.
- 3d. Lowering of the temperature of the body.

Bartholow's observations are that "two drams of bromide of potassium will lower the temperature in a healthy adult from one-fifth to one half a degree, the respiration from two to five, and the pulse from ten to twenty beats per minute. The sensibility to pain, but especially the sensibility to tactile impressions, is lowered by the bromides at all accessible points of the mucous membrane and the skin. The diminution of the sensibility of the mucous membrane is due in part to a local action of the salt as it is being eliminated. They also possess the power to destroy or impair the irritability of the motor and sensory nerves, and the contractility of muscle."

Now I can state categorically the therapeutic uses which

may be made of bromide of potassium in dentistry, and we can all see and understand the *modus operandi*.

1st. We can use bromide of potassium to quiet cerebral excitement.

2d. We can use it to diminish the sensibility to tactile impressions in the mouth.

3d. We can administer it freely without any fear of unpleasant results.

Our brethren in the medical profession are demonstrating the value of bromides in these respects every day, and that not in serious maladies alone, but in the more trivial yet none the less disagreeable, just such as we meet every day in our own practice.

The physician is called in to see a patient suffering from severe mental excitement, caused, perhaps, by nothing more than a "scene" in the family. There is no disease, but simply that condition of cerebral excitement and reflex irritability vulgarly called "hysterics." Our clear-headed physician perceives the condition, administers a full dose of bromide of potassium, and soon the peculiar effects are seen. The brake is applied to undue excitement and irritability, and a condition of peace and quiet follows.

The novice in public speaking having the ordeal of an address or lecture before him, knows by certain preliminary signs, and perhaps by past experience, that when he shall stand before his audience in a state of high mental excitement the follicles of the mouth and pharynx will close and leave the tongue cleaving to the roof of the mouth, the throat suggestive of a very dry spell of weather, the heart beating an alarm, a "globus hystericus" in the throat (the lump which can be swallowed but not kept down), the air passages so occluded in consequence of the nervous excitement that one hundred breaths a minute seem a necessity, the hands and feet unable to find a resting place, and, more than all, the very opening sentence of a carefully prepared and well memorised address completely gone from memory. Now thus forewarned, he goes to a physician and states the case. The one who is not familiar with the virtue of the bromides may laugh and joke, but the one who does know orders thirty grains of the bromide of potassium, to be taken

one half hour before the time of need. And with this brake on nervous excitement the speaker comes up to the ordeal smiling, fresh and cool as a veteran.

The *Laryngoscopist* finds a patient who, the moment a mirror is placed in his throat, so far forgets himself as to try to swallow it. The examination of the larynx cannot be made. What is to be done? The trouble is simply reflex. The patient has the best intentions, but is helpless. Scolding is of no use. The physician simply orders a gargle of potassium bromide to be used frequently, and directs the patient come again next day. Then there is no trouble. The brake has been applied; the patient cannot be made to swallow the mirror, and the examination is completed with perfect ease.

And now I come to the practical part of my subject, to which these remarks have been leading. Certainly the results which the physician obtains from bromide of potassium in his practice, in these trivial matters, as some may be inclined to call them, are highly suggestive to us as dentists, and may be applied in somewhat similar cases in our own practice; cases which, if not serious, are very trying to both patient and operator. I refer to all that class of troubles we meet characterized by cerebral excitement, heightened reflex irritability, or marked by hyper-sensitiveness to tactile impressions.

It is scarcely necessary for me to say that a perfect fitting denture cannot be made without perfect impression, and yet how often we try to obtain a satisfactory result with one we know to be imperfect, because it seems impossible to get a better, since each attempt produces a paroxysm of coughing and choking on the part of the patient that compels us to withdraw the cup sooner than we wish. If this condition were due to foreign matter in the pharynx or larynx, actually impeding respiration, we should have no remedy; but since it is so often produced when that condition does not exist, it can be classed only in the same category of reflex disturbances that the *Laryngoscopist* meets, and this being the case thirty grains of bromide of potassium given immediately on the arrival of the patient will, one half-hour later, obviate this difficulty and render the patient as docile in our hands as in the hands of our medical friend.

Again ; a patient presents herself desiring to have gas administered, but so nervous that she can scarcely sit still while you are making the examination, and sometimes with a doleful tale of how she almost "cleaned out" another dentist's office when he attempted to administer the anæsthetic, and he was compelled to perform the operation while she was only partially unconscious, thereby causing more mental suffering than if the gas had been dispensed with. Now the trouble is increased by the memory of that occasion. But it can all be remedied and the way made clear by the administration of from thirty to forty-five grains of bromide of potassium.

Again ; how frequently we have patients who tell us that they dread the after effects of a sitting far more than the actual pain of the operation, as they invariably suffer from nervous prostration and headache for hours. Administer thirty grains of bromide of potassium about one half hour before you begin, and the patient will leave your chair after a sitting of an hour or more, surprised to find himself as well as when the operation commenced. Then we can take a hint from the fact that bromide of potassium will lessen the sensibility to tactile impressions, and give a dose freely when we have a very sensitive tooth to deal with. The result I have found to be perfectly in accordance with what we should expect.

PROFESSIONAL SERVICES AND PROFESSIONAL FEES.

By EDWIN T. DARBY, M.D., D.D.S.

(Concluded from page 66)

Few people are able to judge of the value of anything outside of their own specialty. Nine-tenths of those who purchase judge of the value by the price asked. They reason that a thing must be good if it be high in price. They apply

the same rule to professional services that they would in the selection of an India shawl. It is not the ignorant and superstitious alone who thus estimate values. Some years ago an intelligent physician called upon me to ask the quality of some operations performed for him by a dentist in a little village where he was spending his summer vacation. He employed him because he had leisure, and *presumed* he was skilful. He had no reason to doubt the quality of the service rendered until he paid the bill. The price charged was one dollar per cavity for gold fillings, many of them large. The operations were beautiful; had he paid five or ten dollars each instead of one, he would have been sure the work was good. I recall another case, the reverse of this, but which illustrates the argument. A gentleman about going abroad, to be absent a number of years, asked me to whom he should apply in case he needed services while there. I gave him the names of several whom I believed good men and true. When he returned, some years after, he told me that he had been in the hands of one of the gentlemen, and had five gold fillings inserted, for which he paid the modest sum of \$400. He did not question the quality of the work, but thought it just a little dear in price. It is one of the characteristics of humanity that it appreciates most that which costs most, whether it be of money, of labour, or of sacrifice. It has often been said that the professional man has ample opportunities for deception and fraud, and the saying is undoubtedly true. He has it in his power to palm off ignorance for knowledge, poor work for honest service, and may extort from his patient extravagant fees, while another would be satisfied with reasonable ones.

There is, perhaps, no calling in life where innate honesty is more essential than in the practice of dentistry. The dentist can conceal his mistakes and blunders almost as well as the physician; if he be shrewd as well as dishonest, he can deceive his confiding patients at every turn, and it may be months or years before they are aware of it.

During the last quarter of a century great changes have been made in the methods and value of service in our specialty. The introduction of cheap bases for artificial teeth, and the increase of more than eight thousand prac-

tioners of dentistry, have had a tendency to lower the standard of excellence, and to materially affect the price of dental operations. I am not prepared to say that the introduction of rubber, celluloid, and other cheap bases has been a curse to the public, but I am strongly of the opinion that thousands of valuable natural teeth are annually sacrificed, and their place supplied by miserable plates at miserable prices. So great has become the competition in the country, and even in some of our city offices, that whole dentures are furnished at the small sum of ten dollars.

I met a gentleman, a few weeks ago, in the interior of New York State, whom I had known twenty years ago as a reputable practitioner. He said that so great had become the competition in his own vicinity that he was now making whole upper and lower sets of teeth for ten dollars, and others were doing it for less. Gold fillings were inserted for one dollar, and amalgam and other plastics for fifty cents. The demand was for cheap work, and there were more than enough dentists to supply the demand at those low rates. So little skill is required in the construction of these cheap bases that in the past the blacksmith has forsaken his anvil, and the joiner his plane, and with forceps, impression cups, and vulcanizer, he has itinerated the country, supplying the demands of the people.

In mercantile pursuits competition is said to be the life of trade, but its twin sister, over-production, has been the death of many. When the supply exceeds the demand, prices are low, and often ruinously so. Our country is at the present time experiencing the baneful results of over-production. Factories and mills are being closed, and coal mines are being flooded, and the laborer and operative are suffering for employment. History has shown that whenever there has been depression or a panic in business, the professions have had a large influx. Our medical and dental schools have opened the present year with large classes, and will continue to do so until the depression ends.

Of late there seems to be a growing belief that the dental profession offers one of the most lucrative fields in which to labor, and it is sometimes amusing to know the estimate which people place upon our work and our pay. A business

man, who had several sons approaching manhood, called upon me recently to ask my advice about one of them, whom he thought of educating in dentistry. He said his son leaned toward dentistry, and as it seemed to be an easy life, with big pay, he himself believed that he could not do better than to start him in the "business." My reply to him was to the effect that if he expected his son to have an easy life with a fat purse, he had selected the wrong calling. The two conditions are incompatible. The men who have been successful in dentistry have had laborious lives, sacrificing health, recreation and enjoyment, and, as a rule, dying an untimely death.

The average dentist is poor ; poverty sat by his cradle, was his playmate and companion through life, and often follows him to his grave.

If we have fine homes and the comforts which others enjoy, it is because we are diligent in business, prudent in expenditures, and conscientious in our dealings with those who employ us. Notwithstanding we have trials and perplexities (and I sometimes think the dentist has more than others), it is encouraging to believe that the more intelligent of every community appreciate the labouriousness of our lives, and pay our fees cheerfully.

But there comes a period in the life of every dentist who has been successful in attracting a large clientele, when the matter of fees or charges for his services becomes one of the problems which he must solve. In the earlier years of his professional career, when patients are few and his reputation yet unmade, he is better content to accept small fees than to sit in idleness. His modesty in the matter of attainments, and his timidity lest he drive some away in consequence of his charges, prompt him to keep his fees below those of other men engaged in the same calling, and often below their actual value. But when in after years his services are sought by greater numbers, and his appointment book is filled for weeks or months ahead, he begins to feel that his experience has enhanced the value of his service, and he instinctively puts a higher moneyed estimate upon his skill. The tyro may perform a given operation as well as the man who has had twenty years of experience, but the beginner lacks the

judgment which twenty years of experience will furnish him. Hence he lacks that which will enable him to decide when and how to perform a given operation. If your services and mine are worth more than the services of the newly made graduate of one of our colleges, it is because we have had the experience of ten, twenty, or thirty years, and with it the accumulated skill which these years of experience must bring us. How, then, is the man of experience to regulate his charges? We have seen that competition in the country has lessened the standard of excellence, has reduced the price of professional service to that of mechanic's wages, has killed ambition, and has been the cause of the sacrifice of thousands of valuable teeth.

Professional men ought never to compete in anything save excellence.

The fee system of Europe has some features which commend it to our American practice, but it has defects which it is to be hoped will prevent its adoption in this country.

The English fee is a guinea for consultation, extraction, and ordinary stoppings (fillings). For the minor operations it would seem to us an excessive charge, but the expectation is that the average will be made good in the more prolonged or difficult operations. Having a given fee for each sitting, whether it be long or short, the tendency is to make it as short as possible. It is not an unusual thing for a dentist in full practice in England to see from twenty-five to fifty patients in a day, receiving from each a guinea. An American dentist would not feel that he could do justice to half that number. Patients of mine, who have sojourned in England and been in the hands of English practitioners, complain at the aggregate cost of this system of charging. Assuming that English operative dentistry is equal to ours (which it is not), the cost to the patient would be greater than the charge of the average American dentist of ability for a similar amount of work.

The French and German-American dentists have a similar fee. The usual fee in France is a napoleon, or about four dollars American money. The German dentist proper has a mixed way of charging, but the German-American dentist has a minimum charge of fifteen marks, or about three

dollars and seventy-five cents of our money, and often doubles it for a sitting of any considerable length.

It is to be presumed that in countries where amalgam and the plastics are more commonly used by the better dentists, this system would work better than with us, who use a larger per centage of gold for filling teeth. Perhaps the most just way of fixing one's charges is by the hour, or the time system, and the testimony of those who have tried it for years is to the effect that it is more satisfactory to the majority of patients. In cities, and among practitioners who confine themselves exclusively, or nearly so, to operations upon the the natural teeth, it has much to commend it. It insures to the dentist pay for his time, and time is his stock in trade. It insures to the patient painstaking work, because the operator has no selfish motive to hurry. It prevents misunderstanding in the matter of accounts, for the patient can keep his own reckoning. It is more professional, for it is a charge for time and service, and not for material. It inculcates the adage that time is money, and so prevents loitering and needless conversation. But you tell me that the dilemma is unchanged, and how is the dentist to estimate the value of his services per hour? One man is slow in his movements and gentle in his touch; another is as quick as lightning and accomplishes much more in a given time; hence his services are cheaper to the patient if the price per hour be the same. I am free to admit that there is force in the objection, but the price per hour need not be the same. Every man has a pretty correct idea of the value of his time. He knows, or should know, what income he should receive for a year's service. Let us occupy a moment in details. Of the three hundred and sixty-five days in a year, fifty-two are, by custom, set apart as days of rest, leaving three hundred and twelve days, exclusive of holidays. But no dentists should, and few can, pursue their calling without periods of recreation. A month is too little, but it is better than nothing. Let us subtract, then, forty days for pleasure, leaving two hundred and seventy-two working days. The average dentist, in full practice, stands at his chair seven hours per day (if he does more he dies earlier), making a total of nineteen hundred and four hours. From this a liberal reduction must

be made for unavoidable delays and unaccomplished purposes, reducing the number of paying hours in a year to about eighteen hundred and fifty, which at five dollars per hour would amount to \$9,250; or at ten dollars per hour to \$18,500. These fees may seem high to some, or low and reasonable to others. They are about the average prices charged by dentists, whether it be by operation or by time, and are as low as the public can expect from professional men who devote their lives to the task of saving teeth. Few men engaged in our calling have amassed a fortune, or even a competence; but if the facts were known, it would be seen that the men who have been uniform in their charges and methodical in calculating the value of each moment and hour are those who have accumulated most and served the public best.

A CONDENSED HISTORY OF HISTOLOGICAL OBSERVATIONS.*

By FRANK ABBOTT, M.D., New York.

It was appreciated in a measure by Aristotle, who was born 384 years before Christ, that animals and plants, however complex their organization, are composed of a limited variety of elementary parts constantly recurring. It seems, however, to have been more clearly conceived by the father of medical science, Galen, who lived 400 years later. Aristotle distinguished as "*partes similes*" those structures, such as bone, cartilage, fat, flesh, blood, lymph, nerve, ligament, tendon, membrane, vessels, nails, hairs and skin, not confined to one part of the body, but distributed throughout it generally. He applied the term "*partes dissimiles*" to the regions of the head, neck and extremities. We are indebted to Fallopius of Modena, 1523 to 1562, for our knowledge of the conceptions of Galen, in regard to these "*partes similes*." These, however, do not correspond to the "*elementary parts*" or cells of Schwann. Prof. Huxley says in his essay on "*The Cell Theory*," "*they were ultimate to Fallopius because he could go no further, though it is of*

* We are indebted to the transactions of the State Dental Society of New York for this paper.

course, a very different matter whether we are stopped by the imperfection of our instruments of analysis, as these older observers were, or by having really arrived at parts no longer analyzable." These "*partes similes*" really correspond to the "tissues" of the present day, which are collections of elementary parts. That the Egyptians knew something of the magnifying properties of lenses, as well as the Greeks and Romans, over 2,000 years ago, seems quite probable, from the fact that a table of refractive powers is introduced into his "*Optics*" by Ptolemy. Aristophanes, the Athenian poet (B.C. 500), speaks of "burning spheres" of glass as sold in the grocers' shops at Athens, and both Pliny and Seneca refer to lenses and their magnifying properties. Some of these lenses have been found in the ruins of Nineveh, Herculaneum and Pompeii. Compound microscopes, however, did not become available till about the year 1590, about which time Jansens, father and son are said to have invented it. Fontana, in 1646, writes that he had invented the microscope in 1618. Galileo, in 1612, is said to have sent a microscope to King Sigismund, of Poland; whether it was of his own invention or not cannot be determined. Whoever the original inventor may have been, it is certainly impossible to estimate the assistance this instrument has been to succeeding generations in opening up the minute structure of animals and vegetables. Prof. Huxley says: "The influence of this mighty instrument of research upon histology can only be compared to that of the galvanic battery in the hands of Davy, upon chemistry. It has enabled *proximate* analysis to be *ultimate*."

The time prior to the invention of the compound microscope may be considered as the *first period* in histology; that between this date and that of the observations of Schleiden and Schwann (1838) the *second period*, and since that time the *third period*. Barellus, of Pisa, seems to have used the microscope in the examination of the structures of higher animals about the 1656.

According to Boerhaave, Swammerdam had recognised the blood-corpuscles in the frog in 1658. Malpighi, between 1661 and 1665, had seen the blood-corpuscles in the hedgehog, had witnessed the circulation of the blood, and had published observations upon the minute structure of the

lungs—which he compared to a racemose gland—of the kidneys, spleen, liver, and membranes of the brain.

In 1757 Haller made the first intelligent attempt at building up the tissues by an ultimate physical element, to correspond with the “atom” of the inorganic chemist. “He resolved the solid parts of animals and vegetables into the ‘fibre,’ and an organised concrete.’ To the former he assigns the most important position, asserting that it is to the physiologist what the line is to the geometrician; that a ‘fibre’ in general may be considered as resembling a line made up of points having moderate breadth, or rather as a slender cylinder.” In 1759 to 1774 Wolff promulgated a theory, given as follows by Prof. Huxley: “Every organ is composed at first of a mass of clear viscous, *nutritive fluid*, which possesses no organization of any kind, but is at most composed of globules. In this semifluid mass cavities are now developed: these, if they remain rounded or polygonal, become the subsequent cells, if they elongate, the vessels; and the process is indentially the same, whether it is examined in the vegetating point of the plant, or in the young budding organs of an animal. Both cells and vessels may subsequently be thickened by deposits from the ‘solidescible’ nutritive fluid. In the plant the cells at first communicate, but subsequently become separated from each other: in the animal, they always remain in communication. In each case they are mere cavities and not independent entities; organization is not affected by them, but they are the visible results of the action of the organizing power inherent in the living mass, or what Wolff calls the ‘vis essentialis.’ Two points are here to be particularly observed as cardinal—first, the non-independence of cells, either anatomically or physiologically; that they are effects, *passive results*, and *not causes* of a vitalizing or organizing force; second that organization takes place from the ‘differentiation’ of the homogeneous living mass in these parts through the agency of the ‘vis essentialis,’ or inherent vital force.”

Among the first to express himself clearly upon the cellular or vesicular composition of animal organisms, as well as vegetables, was Oken, who, in 1805, in his work on “Generation,” speaks of elementary parts as “vesicles,” and who

says, "The first transition of the inorganic to the organic is the conversion into vesicle which I in my theory of generation have called 'infusorium.' Animals and plants are throughout nothing else than manifoldly divided or repeating vesicles."

In opposition to the "fibre" theory, then so prevalent among histologists, the "globular" theory was advanced in 1779. It is true that Leuwenhoek, as early as 1687, announced the "*globular*" structure of the primitive tissues of the body, but this theory attracted very little attention until this period of reaction against the "fibre," when it claimed the attention of Prochaska (1779), Fontana (1778), the brothers Wenzel (1892), Treviranus (1816), Bauer (1818, 1823), Heusinger (1822), MM. Prevost and Dumas and Milne-Edwards (1823), Hodgkin (1829), Baumgartner (1830 to 1842), Frederick Arnold (1836), Dutrochet (1837), Raspail (1839); all except Hodgkin admitting, in greater or less degree, the importance of the globule as an ultimate physical element. It seems at the same time that no little confusion existed in the use of terms, the words *globule*, *granule* and *molecule* being often indiscriminately used.

It should here be mentioned that in 1828, Dollinger announced that the tissues of the body are built of blood-corpuscles, which move in wallless channels in these tissues.

It would seem from the foregoing facts very evident that for some years previous to 1838 the cell had been recognised as a constantly recurring element in vegetable and animal tissues, though little importance has been attached to it as an element of organisation. Raspail tells us in 1837, that in the condition of development, there are vesicles or cells endowed with life and the property of reproducing out of themselves other cells of the same structure and endowments.

Previous to this, however, a most important discovery was made, viz: the "nucleus," by Dr. Robert Brown, of Edinburgh, 1833. He failed, however, to appreciate its importance, though its discovery was another fact added to those necessary to complete the data on which has been founded the so-called "cell theory."

The pre-existence of the nucleus, and the gradual development of the cell about it, Valentin attempted to demonstrate in the case of pigment cells, C. H. Schultz in the blood cor-

puscles, Rudolph Wagner in the egg, and Henle in epithelium all before the works of Schleiden had appeared. Valentin too, had said, when describing the nucleus of epidermic cells, which he first pointed out, that they reminded him of the nucleus of the cells of vegetable tissues. Dr. Waldo J. Burnett states Valentin "perceived the true physiological relations of cells as far as he well could without apprehending the grand fact that the nucleated cell is the fundamental expression of organic forms."

In the year 1838, Schleiden pointed out the formation of cells in vegetable structures according to a single and uniform method, and elaborated the theory of development of which the cell was the unit, and which Schwann immediately applied to animal tissues. One obstacle, however, presented itself in the way of a law of development, applicable alike to animal and vegetable tissues, namely, that animal tissues are furnished with vessels, in which respect they essentially differ from plants; an independent vitality being ascribed to the elementary particles of vegetables growing without vessels. This obstacle had, however, been in a measure removed, in 1837, by Henle, who showed that an actual growth of the elementary parts of epithelium took place without vessels. Taking up the nucleus as discovered by Dr. Robert Brown, Schleiden in referring to its function, gives it the name of "*cytoblast*." I will not weary you with the conclusions which he arrived at, as to the formation of cells, their reproduction, etc., etc., but will refer you to Tyson's "Cell Doctrine," from which much of this paper is quoted.

The merit of Schwann consisted in applying the theory of Schleiden to animal tissues. Thus, in a "*cytoblastema*" (cell contents), either structureless or minutely granulous, "a nucleolus is first formed; around this a stratum of substance is deposited, usually minutely granulous, but not at first sharply defined on the outside. As new molecules are constantly being deposited in this stratum between those already present, and as this takes place within a precise distance of the nucleolus only, the stratum becomes defined externally, and a cell nucleus, having more or less sharp contour is formed. The nucleus grows by a continuous deposition of new molecules between those already existing, that is by

intussusception. If this go on equally throughout the entire thickness of the stratum, the nucleus may remain solid ; but if it go on more vigorously in the external part, the latter will become more dense, and may become hardened into a membrane, and such are the hollow nuclei. At a certain stage of development of the nucleus the cell is formed around it, to wit, a stratum of substance, which differs from the cyto-blastema, is deposited upon the exterior of the nucleus. In the first instance this stratum is not sharply defined externally, but becomes so in consequence of the progressive deposition of new molecules. The deposition of new molecules between those already existing proceeds, and is so effected that when the stratum is thin the entire layer, and when it is thick only the external portion, becomes gradually consolidated into a membrane."

(To be continued.)

IN THE "ARCHIVES OF DENTISTRY" editorial we find: "Some months since we intimated that an iridium gold would be a good thing, and soon we were in receipt of some, from two sources, in the form of heavy foil, and upon practical tests, it proved no improvement upon the platinum gold shade 3. A rich alloy of the metal does not work favourably in the form of foil, and we wish to suggest that some crystalline form of iridium, or iridium and platinum, electro-gilded would probably accomplish the desired result, a hard enamee surface for gold fillings.

BERLIN DENTAL CLINICS.—There are rumours abroad that the progress made has not been so satisfactory as was at first hoped. Dr. Busch, Dr. Paetsch and Dr. Miller with Mr. Sauer are stated to be the professors, Dr. Bush being director. A Correspondent favours us with the information that the fittings of the clinics are not what they should be and are behind those of our own country. If this be so it is a great pity that at Berlin where the other specialties are so carefully and efficiently taught, dentistry should be allowed to come off as badly as our Correspondent hints is the case.

Reflections from the Surgery.

THE NEW ANÆSTHETIC—TRIAL IN DENTAL SURGERY—FOUR SUCCESSFUL OPERATIONS.

(Reported in the Nashville American.)

Yesterday morning at 10 o'clock, in the hall of the Dental Department of Vanderbilt University, Prof. W. H. Morgan conducted a clinic in the presence of members of the faculty and an enthusiastic class. The first case was an inferior wisdom-tooth, overgrown with inflamed and exquisitely sensitive gum tissue. A drop of a four-per-cent. solution of hydrochloride of cocaine was applied to the sensitive structure on a bit of cotton, and at the expiration of four minutes the parts were freely incised, the patient declaring that he felt no pain.

The second case was an exposed and highly-inflamed tooth pulp (nerve). The anæsthetic was applied as before, and after the lapse of three minutes and a half, the Professor thrust his instrument into and tore away a portion of the offending organ, while a pleased and gratified expression played about the patient's countenance. The Professor announced that this was ordinarily one of the most painful operations in all minor surgery.

The third case was the extraction of a superior second molar a firmly attached tooth, though ulcerated. In this case a small rope of cotton was wound about the tooth, saturated with about two drops of a five-per cent. solution of the oleate of cocaine, and brought in contact with the gums, waiting seven minutes for complete absorption. The tooth was extracted without causing the slightest pain.

The fourth and last case was an inflamed cavity, the result of rapid decay, and which could not tolerate the touch of an instrument. After five minutes application of the five-per-cent. oleate solution, the cutting and removal of the decayed tooth bone was accomplished without the least pain.

One could not witness the series of operations without a feeling of awe and admiration. The result seemed so like magic.

British Journal of Dental Science.

LONDON, FEBRUARY 1, 1885.

PERSONAL SUPERVISION OVER THE TEETH.

It is an old saying that "God made the teeth and man the dentist." Few of us would have much to do, if it were not for two chief determining factors of dental degeneration: (1) man's artificial life in the present day, and (2) man's profound ignorance of his own physiology. Tell him that fire burns and he will probably test the truth of the statement, once and for all. He will get his fingers burnt once and then he will accept the statement, and avoid contact with flame in the future. But explain to him that he has certain structures within his mouth, which are exceedingly liable to go wrong by return of hereditary taints, unless he takes certain plain and simple precautions, and watch the result *Imprimis*, he will ignore the fact that he daily introduces into his mouth the most *bizarre* selections of materials, materials which he facetiously calls foods. Over-sweet he corrects by acids; entrées and courses piled like Ossa on Pæleon he has to wash down with sour wines or badly-malted beers. Having stored away the excesses which do duty for a meal, he will, if he be exceptionally particular, wash his teeth, fondly hoping that the bristles of his tooth-brush will prove a sop to the Cerberus—dental caries. The after dinner nap, the miserable distention, the pyrosis, all attest to his excesses, but they fail to bring it to his mind that he is eating his own teeth. The "acidity" he familiarly calls his hereditary, probably, gouty dyspepsia. Gout is a highly respectable disease, and smacks of Norman ancestry. He will plead his vice's cause among his friends, who pity him, not for his subjection to his pet vice, but for his hard fate. The acidity means reversal of Nature's laws; it means that the equilibrium existant between the structure composing the polity of the mouth is discomposed, and the bias towards disease engendered. Were a dentist to say to his patient, "Will you allow me to draw a tooth which will decay?"

prompt would be the negative; but when the death warrant to tooth and gums comes in the shape of scented *carte de menu*, things are different. The dinner is eaten, and the tooth begins "to go." Men, again, think away their teeth. They exhaust their bodily basis that they may formulate a theory or float a company. In either case the teeth, in common with other structures suffer. Are we to give up dining, go as free from thought as our arborestial ancestry, and insist upon our patients doing likewise? Probably, yes. As a matter of fact men who are civilised never adopt an extreme course, and so we must condone the dinner and the brainwork, merely endeavouring to counteract their deleterious effects.

Happily many are now alive to the dangers which follow upon actual neglect of their teeth. The man of average education nowadays plies well his toothbrush, and consults his dentist as soon as twinges warn him of a tooth's having passed from the state physiological to the state pathological. He has yet to be told that the condition of the mucous membrane of his mouth is in direct harmony with that of his stomach, and that dyspepsia of the stomach means a dyspepsia—if we may be allowed the expression—of the mouth. The hot breath, often foul, the dry cracked lips, the coated tongue, all mean deranged digestion, and deranged digestion means danger to the teeth. It is this fact which has not as yet been brought to the laity. The correlation of the teeth to the secreting apparatus of the entire alimentary tract cannot be too strongly insisted upon. The everyday life of the average Englishman positively bristles with sins against his teeth—errors alike of commission and of omission. He seldom cleans his teeth sufficiently, and but very rarely does he clean them in the right way. He not only neglects to eat such food stuffs as are imperatively needed for the adequate bone formation of his and his offspring's body. He also persists in ingesting materials useless as foods and deleterious in their direct or remote effects upon his teeth. Dentists are perhaps even more than confidential physicians, the advisers of their patients in health. They are expected not only to set right the ravages of time, but also to direct as the best means of preserving the teeth, and maintaining them in their

healthy, natural condition. To execute this important branch of the dentist's art, he must be well armed with his facts of digestion on its physiological and pathological bearings. He must know before he can preach, and must have a definite line of conduct to recommend.

JOURNALISTIC ETHICS.—Under this heading the Editor of the *Dental Cosmos* draws attention to an omission on our part for which we hasten to express our great regret. Our readers will remember the very valuable translation of Fournier's "Syphilitic Teeth," which appeared in our Selections. This translation carefully executed by Dr. White, was undertaken for the *Cosmos*, and we have much pleasure in reminding our readers of our indebtedness to this Journal. Any casual observer will by glancing over the index of the *Cosmos* which we noticed in a recent issue discover how valuable a storehouse of dental literature the *Cosmos* is. It is in the interest of our readers that we should lay such Journals under frequent contribution, of course taking care, as the *Cosmos* justly says, "to give credit where credit is due."

DANGERS OF SLEEPING WITH ARTIFICIAL DENTURES.—A case of swallowing a tooth plate is recorded in a paper contributed to the *Glasgow Medical Journal*. The patient, a lady of twenty-four, went to sleep with artificial denture in her mouth. During the night the teeth became loose, and slipped back into the pharynx. They then passed through the alimentary canal, and were finally voided per rectum.

PROSECUTION UNDER THE DENTISTS' ACT.—At the Edinburgh Sheriff Court, according to the Scottish correspondent of the *British Medical Journal*, last week, William Robertson was charged at the instance of Frederick Canton, honorary secretary of the British Dental Association (with the consent and concurrence of the Branch Council for Scotland of the General Council of Medical Education and Registration of the United Kingdom), with having, in November last, contravened the Dentists' Act of 1878. It was alleged that he, not being a person registered under the Act, and not being a legally qualified medical practitioner, unlawfully used the word "dentist" on a brass plate on the

gate of his house at 28, Rankeillor Street, on the lamp in front of his house, and in advertisements inserted in three different newspapers. The accused, who was convicted of a similar offence in October last, when he was fined £5, pleaded guilty, and the sheriff imposed a penalty of £20, with the alternative of twenty-one days' imprisonment. The fine was paid. This was the second conviction of Robertson for the same offence.

ANTISEPTIC POWERS OF PERMANGANATE OF POTASSIUM.—Dr. Bartholow, writing in "Medical Notes," says: The permanganate of potassium is to be classed with the "deodorizers" rather than with the "antiseptics." From this point of view it is an "elegant" disinfectant. In an elaborate research on the antiseptics and their power to destroy bacteria, Bucholtz does not include this salt amongst the list of agents possessing the power to destroy bacteria and similar organisms. Again, M. Ratimoff, in a paper on antiseptics and the results of their use in surgical practice, has also ignored the permanganate, not mentioning it amongst those agents that have true antiseptic power. Dr. Miguel assigns permanganate of potassium to a group containing the salts of lead, zinc, nickel, and cobalt, alum, tannin, the mineral acids, and other agents. The first group is composed of "substances eminently antiseptic;" the second of "substances very strongly antiseptic;" the third of "substances strongly antiseptic;" the fourth of "substances moderately antiseptic;" the fifth of "substances feebly antiseptic;" and the sixth of "substances very feebly antiseptic." Permanganate of potassium, in a list of 91 agents having qualities more or less antiseptic, stands 44, the bichloride of mercury being first. The important point, however, to be determined in respect to the powers of any antiseptic is its effect on the vitality of living germs or microbes. In the attempt to ascertain this quality of any antiseptic, certain precautions must be observed if the results are to possess any real value.

A correspondent has favoured us with the following cutting from the *Birmingham Daily Post*:—"AN IMPUDENT IMPOSTURE.—At the Hanley Police Court, yes-

terday, a man giving the name of Arthur Hooper Broadhurst, but having several *aliases*, was charged with obtaining money by false pretences. It was stated that for some time past the prisoner had been travelling about the country, and obtaining various sums of money by falsely representing that he was a dental surgeon brought down in the world by adverse circumstances. His plan was to call upon members of the profession, with the view, as he stated, of obtaining employment, but his calls were generally made after business hours, and he usually promised to call again the following morning when work was offered to him. Before leaving, however, he endeavoured to obtain money to enable him to pay for his lodgings. It was stated that he had visited every dentist in the borough, and as he used the name of some person who was found to be on the Dental Register the imposture was frequently successful. A few weeks ago a letter appeared in the BRITISH JOURNAL OF DENTAL SCIENCE cautioning members of the profession against the prisoner, and this led to the borough police being communicated with, and the arrest of the prisoner at Congleton. Dr. J. S. Crapper (who had retired from his seat on the Bench), Mr. A. Whittingham (Shelton), Mr. T. Mansell (Birkenhead), and others gave evidence as to the way in which the prisoner carried on his imposture. The prisoner pleaded guilty to begging, and dealing with him under the Vagrancy Act, the magistrates committed him to prison for a month with hard labour.

AMALGAMATION OF AMERICAN JOURNALS.—The “New England Journal of Dentistry” has become one with the “Archives of Dentistry.” The first named journal has justly held a high reputation alike for some professional tone and for the worth of its articles. We may confidently expect the union will be blessed with the most happy results.

A NEW DEPARTURE IN DENTAL JOURNALISM.—We notice that the Dental Record has adopted the excellent plan of publishing a topical serial in instalments with their Journal. It is bound in with the rest of the matter, although it forms a distinct supplement and addition to the letter press. The opening chapters give promise that it will materially increase the interest of the Dental Record's pages.

CLATTERING OF ARTIFICIAL TEETH.—In the “Dental Cosmos,” a writer, Mr. Childs, says:—In arranging the teeth for a lower set, if clattering is apprehended, I grind only enough from the gums to make joints between the cuspids and first bicuspid on either side, leaving those teeth rather wide apart; then, with a thin, round-edged corundum wheel, I grind a half-circle downward in the direction of the length of the teeth in the side of each of the cuspids and first bicuspid; making a round hole downward between these teeth on each side of the set. I then grind a slot downward and backward between the first and second molars, commencing of course between the two inside pins, and making the slot as wide as may be without encroaching too much upon the domain of the pins, and grinding so nearly through the section as to leave the teeth connected only by the thickness of the gum. All of those apertures I allow to fill up with rubber when the case is packed. If when the teeth are worn no clattering takes place, nothing further need be done; but if the contrary is the case, I drill holes down through the rubber and plate where the apertures were ground, and draw in—moderately snug—soft vulcanized rubber, leaving it even with the lower surface of the plate, and allowing the upper end to protrude a little above the grinding surfaces of the teeth. Whenever necessary (which will be only about once in two months) the wearer can with a pair of toilet tweezers draw up the elastic and trim the end; continuing to do so until the elastic is used up, when a new one may be drawn in. By this method a perfect occlusion of the teeth is permitted without clattering.

DEODIZED IODOFORM.—The *Canadian Practitioner* contains the following formula:—

Iodoform	18 grammes.
Sulphate of quinine	3 „
Powdered charcoal	15 „
Essence of peppermint	40 drops.

Thus prepared the iodoform may be associated with the ordinary liquid excipients.

Abstracts of British & Foreign Journals.

SOUTHERN DENTAL JOURNAL.

A NEW METHOD OF PLACING THE ODD-FASHIONED PIVOT CROWN.

By Dr. E. C. REDGELL.

The author thus describes it : " Consider a root in a healthy condition, file or grind it down some distance below the gum, burr or ream out the canal as near the apex of root as possible, cut the walls around the orifice freely, if the wall of the root is no thicker than paper at the orifice it makes no difference ; select a common pivot tooth of size and colour to correspond with the natural teeth ; measure the depth of the canal and socket in pivot tooth and cut from one of Howe's screw posts a pivot of the required length ; dry the canal and fill, about one fourth full with cement (I prefer Caulks), and while it is yet quite soft press your pivot with the crown on it home ; leaning the crown in any desired position at this time, as this will determine its future position ; hold it so for a few minutes, then remove the crown, leaving the post fixed in the cement"

The remainder of the canal is filled with gold or amalgam flush (by preference amalgam) and while soft put the crown on the post, if tapped lightly it will fit.

He fills the socket in the crown half full of cement, puts it on the pivot, and presses home, holding it for a few minutes.

If further trouble is feared it is easy to make the crown removable by filing off the threads " off the post."

" By bending the post, grinding the crown or not, you can give most any of the divergences necessary for the crown."

JOURNAL OF THE BRITISH DENTAL ASSOCIATION.

ANTRAL ABSCESS, SOME CASES IN PRACTICE,* by G. W. WATSON, L.D.S., Ed., Edinburgh.

Speaking of the pathology of antral abscess, the writer deals first with the anatomy of the parts. Considering the proximity of the roots, especially of the molar teeth to the antrum, and

* Read at the Annual General Meeting of the Association at Edinburgh, on August 29th.

the frequency with which they are found penetrating this cavity, it is not surprising there should be antral trouble. Abscessed roots or teeth form a common starting point in these cases; they cause first, irritation of the lining membrane of the antrum, then inflammation, and the secretion is altered. It may be purulent or muco-purulent; its retention owing to the occlusion or partial occlusion of the natural outlet of the antrum, constitutes antral abscess or empyema antri. A similar condition follows the discharge of pus from a sinus, from an abscessed tooth, or suppurating dentigerous cyst into the antrum. Severe nasal catarrh, or ozæna may by extension of inflammation affect the antrum.

Mr. Watson then cites cases. 1.—Aged 24, of strumous tendency, complained of a swelling in the neighbourhood of the bicuspids and molars of the left side of the upper jaw. She had a feeling of tension and heat about the antrum, worse at night. There was a hard and unyielding swelling with slight pain on pressure. The second premolar and first and second molars were carious and pulpless, and responded to the tap of an instrument, especially the second premolar. Mr. Watson diagnosed the case to be one of antral abscess and recommended her extraction of the diseased teeth. She again came under observation in three months, the swelling having increased considerably. On pressure, great pain was caused and it produced a sound like crackling of parchment paper. The teeth under gas and the probe introduced, showed the first premolar communicated freely with the antrum. Enlarging this opening with a trochar, on pressing on the swelling, curdy pus escaped; this was removed by syringing first with tepid water and then Condyl's fluid. The antrum was washed out every two or three days and the lining membrane of the antrum slowly regained health. It was $2\frac{1}{2}$ years before the swollen external alveolar plate resumed its natural state.

Three years after her first attack, she called again complaining of a swelling over the root of the right lateral incisor, the crown of which had been destroyed by caries. The pulp was dead and there was abscess; the other teeth were sound or filled. The incisor root was extracted, and a probe passed up its socket showed it communicated with the antral

cavity. Pressing on the swelling forced out a bright yellow amber-coloured fluid. The same treatment was adopted. To keep the opening into the antrum patent, Mr. Watson uses a piece of iron binding wire surrounded with gutta-percha, a small loop of wire being left outside through which a ligature is put and attached to the adjoining teeth. The diseased lateral incisor being the origin of antral trouble is unusual, and showed that the antral cavity reached nearly to the median line.

Case 2.—M. aged 30, healthy looking. He had been under treatment for ozæna, a foetid purulent fluid coming from the nose on left side, especially in the morning. Boric and carbolic acid solutions and weak solution of argentic nitrate had been tried as nose washes without relief. On examination a slight swelling was seen above the roots of the bicuspid and first molar on the affected side, the first premolar and first molar were carious and painful on tapping; the second premolar was also carious and its pulp slightly exposed. These teeth, except 2nd molar were extracted, there was a communication between the antrum and the socket of the first molar; this was enlarged with a trochar, the cavity washed out with tepid water.

Condy's fluid was used every third day for a week, but without improvement, the remaining bicuspid was removed and a counter opening made with a trochar through the socket of the second molar, which had been removed previously. The symptoms then rapidly disappeared. Caution, we are told is needful in syringing out antrum in cases where the outlet is partly occluded, not to employ too much force, so as to avoid forcing the injection beneath the periosteum and so causing exophthalmos.

CASE 3.—M. æt 32, strong but plethoric. He had almost constant and offensive purulent discharge from the left nostril, always worse when he got up. On his cheek just below the orbit existed a swelling, it lay over the roots of the 2nd premolar and 1st and 2nd molars. The 1st molar tooth had been broken off far up, about 6 months before. The roots of the 1st molar (which was evidently abscessed, were removed. There was a free communication with the antrum through the palatine socket of the tooth. This was enlarged, and

pressure over the swelling gave exit to horribly foetid pus. This case was treated like the rest. After three weeks of improvement he caught a severe cold and the purulent secretion returned and continued for nearly a fortnight in spite of treatment. In two years he was cured, using boric acid or Condy's fluid at intervals.

A fourth case of a similar nature is then added.

Literary Notices and Selections.

ITEMS OF INTEREST.

HOW TO HAVE HEALTHY TEETH, AND HOW TO TREAT THEM IF DECAYED.

By DR. HENRY S. CHASE. St. Louis, Mo.

The development and nutrition of temporary and permanent teeth, depend on the nursing mother. The mother's blood must contain inorganic materials, which are a necessary part of the teeth.

Teeth of the second dentition will become better calcified towards adult life if the blood is well supplied with salts of lime. And the contrary is equally true. Lime salts, to be appropriated by the teeth, must be found in organic life. Artificial salts are useless.

Throughout life the teeth become harder or softer, in proportion to their getting, phosphatic diet. "Soft teeth" are the result of non-phosphatised diet. Natural foods abound in phosphates.

The teeth of infants should be daily cleansed. If the gums are swollen, from the "coming tooth," the gum should be lanced.

The temporary teeth should be stopped with some plastic. The dissolving away of roots and crowns in order to give place to the permanent teeth, show the living motion of their microscopical structure.

Plugs in children's teeth must be considered very temporary, and not much must be expected of them; and still they are a necessity.

Inflammation of the teeth pulps, and of periostiums and pericementums must not be allowed to continue, the health

of the child and the normal development of the advancing teeth will suffer.

The first permanent molar should be preserved till the 12th year, then all four of them may go ; otherwise four bicuspid. Contact and pressure are great enemies of the teeth. Give the permanent teeth plenty of room, and they are easily preserved. A condition far short of crowding, is a *dangerous* condition.

Extraction of molars or bicuspid, or both, is highly important in a vast majority of cases, when the child is twelve or thirteen years old. Ask yourselves this question : "Which will be the best course, in order to give my patient the best denture at the age of twenty-five years ?"

I have had the thanks of many adults for inducing their mothers to allow me to give room to their teeth, when children, in the way spoken of.

The teeth of persons under twenty years old should, as a rule, be filled with some plastic material. Metals are less compatible than their oxides or salts. Gutta percha and gums are more harmonious than metals. Oxides of metals are antiseptics, and plugs which rust next to open dentinal tubes have a preservative and antiseptic influence on the dentine.

Cavities to be filled with gold should be lined, if possible, with some plastic ; amalgams, gold, or gutta percha. Gingival borders of any of the teeth not exposed to sight should be covered with an amalgam, when gold is used.

Non-cohesive foil is best for the greater proportion of the cavity for gold fillings, as a rule, the remainder of the cavity to be finished with cohesive foil. The cylinder is the best form for non-cohesive foil. After excavating, cavities may be wiped with alcohol, creosote or oil of cloves. Retaining points should be avoided, as they are dangerous near the pulp.

"Contour work" in fillings which will increase the masticating surface of a tooth are undesirable.

Room should be left between proximate plugged surfaces of teeth, to assist in cleanliness. The extraction of four teeth in early life will often obviate that necessity.

Wisdom teeth are often troublesome. Twenty-eight teeth in the mouth are enough. But if the first molars or bi-

cuspidals have been extracted before the eruption of the wisdom teeth, the latter are worth retaining. The third molar is as easily saved by plugging as is the second molar. In painful and difficult eruptions of the wisdom tooth, it is often good practice to extract the second molar.

For the filling of roots, a thick solution of gum Sandarach and cotton is good ; it soon dries and hardens from contact with water. The second best filling is solution of gutta percha and gutta percha spindles.

Pericementitis is best combatted with "mercurius vivus" in two grain doses every hour, and tincture of iodine applied to the neck of the tooth and its adjacent gum. The diet should be low.

Alveolar abcess is successfully treated by forcing through the root and gum a stream of carbolic acid or creosote, from the tooth through the external opening in the gum. The canal previously to be washed with water, and then with alcohol.

Pyorrhœa Alveolaris is treated with chloride of zinc paste, first scraping the roots with paper-thin spring-tempered instruments.

Exposed pulps should be saved, half the cases are failures; anti-scorbutics should be given internally, arsenic and creosote are applied next day, the pulp and root vessels are removed in fourteen days.

The roots are then cleaned with water, then alcohol, and plugged with a thick solution of gum Sandarach and cotton. The crown is filled with the same. Thus the tooth remains for a month or longer, for the plug is good for three months. In a month or three months after the removal of the pulp, the crown is permanently filled. The root already contains its permanent plug.

Cleanliness is the preventive of dental decay. Room, room ; non-contact of the teeth is a necessary condition.

ENVIRONMENT, by J. R. WALKER, D.D.S., New Orleans, La.

Dr. Walker found soft, poor teeth, both among children whose teeth had never been properly calcified, and also among their mothers. The result of his investigations showed that environment and lack of supply were the causes.

He does not think that *climate* is answerable for these ills. Rainwater is, when in use for drinking, it contains no lime salts, and bread made of finely-bolted western wheat flour, form a staple of diet. Hence there is an extraordinary lack of lime-salts both in food and drink. Vegetables grown in the Mississippi bottoms seem deficient in mineral elements.

The softening of the teeth, resulting from these conditions was extreme, and required more than change of diet. The writer tried the phosphates, but without satisfactory results. Reflecting that inhabitants of mountain regions have good teeth, and drink water impregnated with the carbonate of lime, induced experimentation with lime water, or a simple solution of carbonate of lime. The results were as thoroughly satisfactory. Continued use of lime water corroborated his view. The writer believes proper care and the use of lime water will not only prevent soft and ill-calcified teeth, but will cure the teeth if erupted in that state.

HARE-LIP OPERATION. NEW APPARATUS FOR DRAWING FORWARD THE CHEEK.

By WILLIAM S. CHEESMAN, M. D., of Auburn, N. Y.

The patient, a lad *æt.* 18, was admitted to the Auburn City Hospital, seeking relief from this deformity. Cleft palate existed as well, but he did not wish that to be operated upon.

On April 20, 1884, the following operation was done. After etherization, the projecting tooth was drawn. The lip and ala nasi on the right side were then freed from their connections to the superior maxilla, so as to be easily movable toward the median line. In order to utilize the border of the right half of the upper lip, the lip was transfixed and a flap cut. The rest of the lip and the interior of the ala nasi were then freshened. The left half of the lip and the interior of the columna nasi were then pared, and a strong pin having been passed through the columna and ala nasi, the parts were approximated and the nostril closed. A second pin was next passed and tied. Silver wire sutures through the fleshy part of the lip, and numerous silk sutures through the approximated border completed the operation. The cheeks were drawn forward, and plaster straps applied, and iodoform was

freely dusted into the right nostril and over the lip inside and out.

The patient made a good recovery from the ether, and the next morning was found to be doing well, except that the adhesive strap from cheek to cheek made considerable pressure upon the lip, causing œdema of the approximated border. To relieve the lip of this compression, while yet the cheeks should be held well forward, an apparatus was devised consisting of two curved tin bands crossing at right angles, one encircling the forehead horizontally, while the other follows the perpendicular line of the sagittal suture. From their point of intersection in the middle of the forehead springs a rod which curves downward in front of the lip. A tinsmith can make the apparatus in fifteen minutes. It must then be thoroughly padded, and firmly bound to the head by roller bandages.

A piece of adhesive plaster wide at one extremity, which may be slit as into fingers, is then made to take hold of each cheek like a hand; and traction being made, the cheeks are pulled forward and the lip relaxed. The narrower ends of the plaster-strips are then fastened to the curved rod.

This apparatus did its work perfectly. At the end of a week, union being firm throughout the whole extent of the wound, it was removed, and ordinary adhesive straps applied. The result of the operation is a lip without notch or irregularity, and having none of the *drawn* appearance so common after the usual procedure. Much more easily obtained than the "cheek compressor," and obviating as it does, the disadvantages of the ordinary adhesive strap, this device is confidently recommended to the notice of the profession. It is of course inapplicable to nursing children, unless they can be fed with a spoon for a brief season.

Correspondence.

To the Editor of "*The British Journal of Dental Science*,"
"THE MANCHESTER DENTAL ETHICS."

SIR,—I thank you for inserting my letter on "The Dental Ethics of Manchester," and as Mr. Champion has thought fit to touch on the same subject under the heading "The Man-

chester Hand-bill," in this month's Journal of the British Dental Association, I shall esteem it much if you will kindly give me space in your Journal to reply to it.

As to Mr. H. Champion's communication, so far as he is personally concerned, I am quite willing to accept his statement of his non-approval of the issuing of the hand bill in question, and I am willing to go further; that the same feelings on the subject are shared by those few he may have spoken to, but to state that the issuing was only known to a few of the managing committee of the Dental Hospital and to none of the Dental staff, I would suggest that he makes further inquiries. I received a small parcel of them from a friend who had received them for distribution, the very day I communicated with you and others on the subject, therefore it seems strange that the distribution of the same should be immediately stopped, when the existence of such became known to Mr. Champion. It reminds one very much of locking the door when the steed is stolen. I have simply taken the matter up from a non-professional point of view, and hearing that the late opposition which has existed for some time past between the present and former staff of the Hospital has been nothing real, but sentimental. I consider I have been doing a good service for the profession generally, in showing up inconsistency. The cry against the former staff was that of self laudation which I believe is not professional, and that the present staff would be found conducting everything on strictly professional lines, and therefore you may judge my surprise when I discovered that the present staff were pushing their names prominently before the public, and thus doing a thing which to my personal knowledge the former staff strictly avoided. I have no doubt that what I have done will be the means of doing good, and regret that Mr. Champion has not in his letter confined himself strictly to statements, but indulges in explaining motives and effects, as I can assure him he is far from being correct, as I am not a brother professional, and further I am not personally interested in the Hospital, beyond wishing all good work success, and honor where honor is due.

Your obedient servant,

Manchester, 1885.

HONORIS CAUSA.

Dental News.

ODONTO-CHIRURGICAL SOCIETY OF SCOTLAND.

The third ordinary meeting of the Session 1884-85 was held on January 8th, at the Rooms, 30 Chambers Street—Andrew Wilson, Esq., L.D.S., Ed., President, in the chair.

The minutes of the previous meeting having been read and approved, the President called upon Mr. John Stirling for his paper upon the "Treatment and Filling of the Nerve Canals in Teeth." [See page 99.]

The President, after thanking Mr. Stirling for his very interesting and practical paper, said that according to their usual custom, the discussion would form part of the business of their next meeting.

CASES OF INTEREST.

Mr. Macgregor exhibited an upper model he had taken of very considerable dimensions. The patient was a man tall and strongly built, but, independently of that, the jaw was exceptionally large.

Also a set of teeth carved in bone and encased in a tin box, in which condition they had been dredged up by a fisherman from Loch Etive.

Both exhibits were handed over to the Curator by Mr. Macgregor.

The President exhibited the skull of an Australian Dingo, on one side of the upper jaw of which there was a supernumary premolar. It was placed between the first, and normal second, and, while smaller than the first, corresponded with it in form. A similar case was, according to Mr. Charles, Tomes recorded in De Blainville's work on "Dental Anatomy," published fully forty years ago.

The Society then adjourned to the second Thursday in February (12th).

MIDLAND ODONTOLOGICAL SOCIETY.

Meeting of the members held at the Medical Institute, Edmund Street, Birmingham, on Thursday, November, 27th, Mr. Richard Owen presided in the absence through serious illness, of the President, Mr. Thomas Howkins.

The minutes of the previous meeting were read and confirmed. The ballot was then taken for the (8) Hon. members, the (15) members and (1) associate and all were duly elected. Dr. R. M. Hatch exhibited a novel flask made of sheet tin, which he explained as being admirably suited for vulcanite work when the system of setting the teeth in vulcanite and building up the denture on the model was adopted. The cost of the flask was not more than twopence, and one would last at least 20 to 30 times of using.

The Chairman exhibited a number of human teeth all of which were curiosities in consequence of some peculiar abnormal growth.

Mr. John W. Roberts, L.D.S., Glas., then read a paper on "Anæsthetics and their administration."

After a short discussion the Chairman suggested that as the paper had been prepared with such great care and contained some valuable information, it would be better, perhaps, if the discussion was adjourned until the next meeting, and this was agreed to.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

The next meeting of the above Society will take place at the Rooms, 40, Leicester Square, on Monday Feb. 2nd, at 8 p.m. Casual Communications by Messrs. Storer Bennett; Walter H. Coffin; A. S. Underwood; Inaugural Address by the President; David Hepburn; R. H. Woodhouse, Hon. Secs.

VISIT OF DENTISTS OF EUROPE TO AMERICA.

We are requested to give publicity to the following:—

AN INVITATION TO VISIT THE SOUTHERN DENTAL ASSOCIATION.—Mr. EDITOR,—Please allow me to extend an invi-

tation to the Dentists of Europe to visit us during the World's Exposition, at the time of meeting of the Southern Dental Association which will occur in New Orleans the last Tuesday in March, 1885. I would be pleased to have any who contemplate visiting us to address me.

B. H. CATCHING, D.D.S.,

Atlanta, Ga., U. S. A.

APPOINTMENTS.

Mr. Alexander Kirby, L.D.S., Eng., has been appointed Dental Surgeon to the Bedford General Infirmary.

Mr. Charles A. Clark, L.D.S. has been appointed Dental Surgeon to the Boys' Industrial Home, Shaftesbury House, Forest Hill.

JOURNALS RECEIVED.

Glasgow Medical Journal; Dental Cosmos; Independent Practitioner; Dental Advertiser; Dental Practitioner; New American Journal of Dental Science; British Medical Journal; Journal of British Dental Association; Z'Odontologie; Revue Odontologique; Revue Odontologique; Revue Odontologique des Bruxelles; Deutsche Monatschrift Zahnhiel Künde; Deutsche Monatschrift des Vereins Zahnkünstler; Zahn Zahntechnische Reform; L'Art Dentaire; Le Progres Dentaire; Ohio State Journal; Caulk's Dental Annual.

REPORT OF CASES TREATED AT THE ROYAL PORTSMOUTH; PORTSEA, AND GOSPORT HOSPITAL.

FROM JANUARY TO DECEMBER, 1884.

Teeth Extracted	670
Stoppings	8
Advice Cases and Scaling	117
Irregularities of the Teeth, treated Mechanically	5
Acquired Cleft of Hard Palate closed with Obturator and Artificial Palate [see <i>British Medical Journal</i> , Dec. 13th, 1884., page 1186]	1
Removal of a Sequestrum which formed the Alveoli and part of the Facial Surface Left Upper Jaw, extending from the Canine Tooth to Tuberosity	1
TOTAL	802

W. H. KIRTON, L.D.S., R.C.S., Irel., Honorary Dental Surgeon

British Journal of Dental Science.

No. 410. LONDON, FEBRUARY 15, 1885. VOL. XXVIII.

ON HERBST'S METHOD OF GOLD-FILLING BY ROTATING BURNISHERS.

By STORER BENNETT, F.R.C.S., and L.D.S., Eng.; L.R.C.P.
Lond.*

MR. PRESIDENT AND GENTLEMEN.—In the April number of the Journal of the British Dental Association for last year appeared an article on a method of filling teeth with soft gold by means of burnishers rotating in the burring engine, introduced to the profession by Dr. Herbst of Bremen. But little notice was taken of the subject until towards the end of the summer, when Dr. Herbst's brother visited England, and gave a demonstration at the Dental Hospital of London. The occasion was inopportune, as most of us were already away, or just starting for the autumn vacation, so the subject again received but scant attention. Later in the year I made a series of experiments, which proved so far satisfactory that I considered it desirable the subject should be brought before this Society, that its merits might be discussed, and the various experiences of those who had tried it be obtained.

Dr. Herbst claims for his method that by its use we can obtain a solid, hard gold-filling, with more perfect adaptation of the gold to the walls of the cavity, with greater ease, and a far less expenditure of time than by any other method; and as he has worked on this plan for six years it is to be presumed he feels satisfied as regards the test of time.

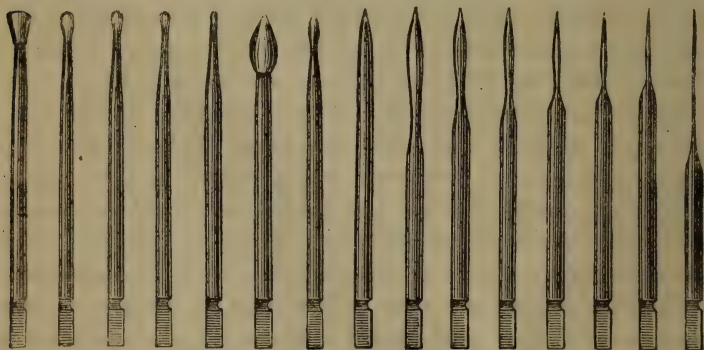
During the process of filling it is necessary to have four walls to the cavity, and where these do not exist already they are temporarily supplied by means of a matrix. Large soft cylinders are employed, and packed into the cavity unannealed, becoming cohesive during the course of manipulation. And herein lies the greatest peculiarity of the process; for by other methods we introduce into the cavity gold which

*A paper read at the Annual General Meeting of the Odontological Society of Great Britain, January 12, 1885.

is already cohesive, but here we introduce soft cylinders which when pressed together show no tendency whatever to cohere, yet, in the course of a few revolutions of the burnisher, become coherent and welded into a solid mass, like a piece of cast metal.

The instruments employed consist of various sized and shaped burnishers, worked by the burring engine, and of the following forms.

They are numbered from 1 to 15. No. 1 is a large inverted cone ; 2, 3, and 4 are large pear-shaped points, all highly polished. No. 5 is ground to a blunt ("roof-form") point, but this must not be polished, but simply finished on an Arkansas stone ; as this instrument is much employed, two or three sizes of it are desirable. The remaining instruments, from 6 to 14 inclusive are polishers used in finishing



fillings. No. 15 is a needle for a special purpose to be described hereafter.

A cavity is prepared in the usual way, care being taken that its interior is larger than its entrance : undercuts may be made if convenient, but are not essential, and no retaining points are required ; the edges of the enamel, though smoothed and polished, should not be bevelled, but left quite square.

In filling a cavity, take for instance the distal surface of a second upper bicuspid, with the masticating surface also involved. Such a cavity by the ordinary method would be filled cohesively from the beginning, and built up in order to reproduce the contour. By the addition of a matrix the

distal wall is restored, and we have now to treat a simple crown cavity. This matrix (which is best formed of a piece of clock spring deeper than the cavity) is wedged between the bicuspid and first molar if that is standing, and secured by two pins, jamming it as tightly as possible. It is essential that the matrix be perfectly firm and steady, or the filling will be unsound.

The tooth being prepared, the rubber-dam applied, and the matrix in position, the cavity is loosely filled with the largest cylinders that can be conveniently introduced, and the largest burnisher selected that the mouth of the cavity will admit. By slow rotation of this instrument in the engine, and the exercise of moderately firm and steady pressure, the gold is squeezed towards the floor and sides of the cavity, acquiring as it is compressed a brightly polished non-cohesive surface. If it is found that the gold rolls beneath the burnisher, it is because too few cylinders have been introduced and more must be added, or because too small a burnisher is being employed. If sufficient gold is placed in the cavity, and a large burnisher used, the gold will not roll, and it is of course essential that this, the base on to which all the subsequent filling is built, should be absolutely steady and immovable.

The burnisher is now changed, and a No. 5 point, not too small in size, and which it will be remembered is left unpolished, is substituted. This is very rapidly rotated with moderate pressure, and the gold *prodded* by it, if I may be permitted the expression, as it exactly conveys my meaning. The whole of the filling must be gone over in this manner, especial care being taken that the gold is thoroughly driven down to the cervical edge towards the matrix, for here if anywhere will be the weak place when the filling is complete.

The rapid rotation causes the gold to be still more condensed than it was at first, to lose its polish, and become converted into a hard and solid mass of cohesive gold. This may be readily proved, for on a soft unannealed cylinder being lightly pressed on to its surface, and then an attempt made to lift it away with the foil-pliers, the cylinder will be found to tear in half, rather than leave the surface to which it has become closely coherent.

The cavity must again be loosely filled with cylinders, and these treated in a similar manner to the former ones, first the large burnisher being used, and then the No. 5, and so on with more and more cylinders until the cavity is quite full, when the matrix may be removed, and the filling smoothed and polished in the usual manner, where necessary.

But little finishing, however, will be required if the matrix has been adapted closely to the cervical and lateral margins of the cavity, and in this way much time and trouble are saved.

During the process of filling it will be noticed that the burnishers become coated with gold, which may be cleaned off by rotating on a piece of emery paper, the large ones on very fine, and the No. 5 on somewhat coarse paper; or, better still, they may be cleaned by being pressed while rotating on a block of pure tin. A little of the tin is apt to be conveyed to the filling, but it does not appear to affect either its working quality or its colour.

(To be continued.)

DISCUSSION UPON MR. STORER BENNETT'S PAPER ON HERBST'S METHOD.*

Mr. Vasey asked if Mr. Bennett could explain how the non-cohesive foil became cohesive during this process? Was it due to the heat evolved by the friction of the burnisher?

Mr. Oakley Coles said that about six or seven years ago he tried some experiments in packing cohesive gold by means of the engine; but his idea had been to consolidate the gold by means of a revolving instrument giving a rapid succession of blows. For this purpose he had used a burnisher with rounded interrupted facets, somewhat resembling a tomato, and with this he was able, out of the mouth, to get very good solid fillings. There could, however, be no doubt that the cohesive quality of gold could be very quickly evolved by the heat generated by the rapid rotation of a perfectly smooth instrument, though he had not thought of this when he made his experiments. He considered that the profession was greatly indebted to Dr. Herbst for calling attention to this fact, and that the Society was much indebted to Mr. Bennett for bringing Dr. Herbst's discovery so clearly before it. The co-

* Held before the Odontological Society of Great Britain.

hesive property of gold under certain conditions was, of course, no recent discovery ; it had been known for thousands of years. But this mode of evolving it, and of securing condensation at the same time, was a novel application of known principles for which Dr. Herbst deserved all the credit.

Mr. Hutchinson thought Mr. Bennett's paper very clear and practical, but a still clearer idea of the process would be obtained if at the close of the meeting he would have an engine brought in and give a short demonstration of the principal points. Thus, he had said that when the cylinders were first introduced, the engine was to be worked "slowly." How slowly? And afterwards that the point of the instrument was to be alternately applied to the gold and then removed, and that it must not be kept in contact too long. All these points could be shown in one minute by practical demonstration, whilst the mere verbal description of them did not convey a sufficiently definite idea.

Mr. Bennett had said that the most troublesome part of the process was the application of the matrix. He (Mr. Hutchinson) had been using a very simple matrix, which he believed to be a very decided improvement on the clock-spring, which had to be kept in place by wedges. It was made by breaking a small pen-knife blade with a thick back—a very common one would do—into short lengths. This formed a very perfect matrix, and its wedge-like shape made it very easy to fix in position, as it adapted itself well to the cervical edge; it could be easily bent if heated. It occurred to him, also, that a very simple and ingenious contrivance shown by Mr. Brunton at the meeting of the British Dental Association at Plymouth, two years ago, would be an improvement on the shellac matrix described by Mr. Bennett. Mr. Brunton's arrangement consisted of a short piece of clock-spring, with the temper taken out of the ends, which were sharply bent on themselves; to these a rubber-dam clamp was attached, and a very efficient and readily applied matrix was thus made when a molar had to be built up.

Mr. Walter Coffin remarked that the great interest which this process had aroused in the United States might

be taken as evidence of its practical value. Dr. Herbst's discovery that soft gold might be rendered cohesive by means of a rotating burnisher was a remarkable one. The value of lining a cavity with soft gold had long been appreciated by the best operators, and the difficulty hitherto experienced in attaching cohesive gold, in order to finish with hard contour work, would appear to be greatly lessened by this very important observation.

He doubted, however, whether the first layers of soft gold if applied with the rotating burnisher, would not be rendered less plastic and adaptable to the walls in proportion as it became hard and cohesive under its action. He would therefore like to ask Mr. Bennett whether he did not think that the first layers of gold would be best applied by hand in the usual way?

Mr. West remarked that, so far as he had heard, this method appeared to be only applicable to easily accessible cavities. He should be glad to know if it could be applied in the case of a cavity requiring a right-angle attachment; such for instance as a buccal cavity in a lower molar?

Dr. Cunningham (Cambridge) said the subject they were discussing was a most interesting one. It appeared to him that Dr. Herbst's discovery was likely to exercise a most important influence on future practice. There were, however, some points which he should be glad to see made clearer. In the first place it seemed curious that only the Bremen gold should give good results. Then he should like to hear a scientific explanation of the statement, that the non-cohesive gold was made cohesive by the action of the revolving burnisher. He could not help feeling some doubts as to whether the gold did become cohesive in the sense in which that term was generally understood. No doubt the added gold could be made to adhere to that which had been previously introduced, but there was a difference between adhesion and cohesion. What made him feel more doubtful on this point was the statement in the paper that in certain cases where adhesion could not be obtained, rough-cutting the surface with a burr would make the fresh gold stick. Very likely it did; but this was not what was usually meant when people spoke of gold being made cohesive.

Then it was said that Dr. Herbst had been at work on this system for six years, and he brought forward clock-spring as the best form of matrix which he could suggest. It appeared to him (Dr. Cunningham) that Herbst was rather behind the times. With regard, however, to Mr. Brunton's clamp, referred to by Mr. Hutchinson, it was unfortunately only applicable in certain cases. He (Dr. Cunningham) would suggest that a good matrix might be made by rolling platinum foil round the tooth, and securing it with a rubber-dam clamp. Possibly also some of the modelling compositions, such as the Al impression material, might do instead of shellac. He thought that Mr. Bennett might have subjected his fillings to some better test than merely beating them out on an anvil. It would be interesting, for instance, to compare the specific gravity of one of Dr. Herbst's fillings with that of one made by other methods. Had Mr. Bennett tried the Bremen gold in the ordinary mode of working?

(To be concluded).

DANGERS OF WEARING SMALL DENTURES.

By JOHN TRUDE FRIPP, L.D.S.R.C.S.I.

In the "BRITISH JOURNAL OF DENTAL SCIENCE," for the 1st of February, a case is recorded in illustration of the danger of sleeping with artificial teeth. From the fact that the plate passed safely through the alimentary canal I should judge it must have been a very small one. Certainly patients should be warned of the danger of keeping an artificial denture in the mouth at night; but I would go a step further, and urge that there is considerable danger incurred in wearing very small dentures at any time. A lady came to me only a few months ago with a small vulcanite plate carrying the two upper bicuspid teeth of the right side, which she told me she had swallowed, but happily passed safely per rectum. They had become displaced during dinner, and passed into the oesophagus with the food before she became aware of what had happened. I had warned her previously of the danger, as the attachments were not secure, but the plate had been worn for several years and the danger was not appreciated until the accident occurred. It may, of course be urged that had the dentures in these two cases not

been so small the wearers could not have passed so happily through the accidents, but on the other hand is it not reasonable to urge that had they been *much* larger the possibilities of their being swallowed at all would have been much reduced.

I have for some time given up the making of small cases and even for a single front tooth prefer to put in a palate.

A small case always requires clasps, which in the larger cases may very often be dispensed with.

There are certainly three distinct advantages in making the cases larger. (1.) Much greater firmness is ensured. (2.) The natural teeth are not so likely to be injured as by the tight clasping of bands and wires. (3.) And there is much less likelihood of a case being swallowed.

A CONDENSED HISTORY OF HISTOLOGICAL OBSERVATIONS.

By FRANK ABBOTT, M.D., New York.

(Continued from page 127)

"Immediately that the cell membrane has become consolidated its expansion proceeds as the result of the progressive reception of new molecules between the existing ones ; that is to say, by virtue of a growth by intussusception, while at the same time it becomes separated from the cell nucleus. The interspace between the cell membrane and the cell nucleus is at the same time filled with fluid, and this constitutes the *cell contents*. During this expansion the nucleus remains attached to a spot on the internal surface of the cell membrane." In this manner, according to Schwann, the animal cell is formed.* He believed that the cell wall was the most active constituent of the cell ; that it possessed the power not only of producing physical and chemical changes in its own substance and the cell contents, but of secreting materials from the surrounding substance and depositing them in its interior ; thus it was that glands secreted, and fat was formed in some cells, pigment in others, etc., etc.

From 1840 to 1846, Henle, Bergman, Reichert and others, published the results of observations, but their conclusions

were so nearly in accordance with those of Schwann that it would be too much of a répétition here.

In the same year, 1840, Martin Barry made some interesting observations, in the publication of which he states "that the germinal vesicle (the nucleus) and its contents constitute throughout the animal kingdom the most primitive portion of the ovum," that the germinal vesicle returns to the centre of the cell, etc, Again he says, "the germinal vesicle fills with cells, and these become filled with the foundation of other cells, so that the germinal vesicle is gradually rendered opaque."

In 1845, Prof. John Goodsir published his paper on "Centres of Nutrition," in which he clearly grasped the two important principles of the modern Cellular Pathology; first, the activity of these centres (nuclei), their power to draw from the capillary vessels, or from other sources, the materials of nutrition, and to distribute them by development to each organ or texture after its kind: second, the origin of such centres, or nuclei, from previously existing nuclei. "From this it follows, not only that the entire organism, as has been stated by the authors of the cellular theory, consists of simple or developed cells, each having a peculiar independent vitality, but that there is in addition a division of the whole into departments, each containing a certain number of developed cells, all of which hold certain relations to one central or capital cell, around which they are grouped. Again, a nutritive centre, anatomically considered, is merely a cell, the nucleus of which is the permanent source of successive broods of young cells, which from time to time fill the cavity of their parent, pass off in certain directions and under various forms, according to the texture or organ of which their parent forms a part."

In 1853 to 1855 the observations of Remak were published. They consist mostly, however, of a discussion of the manner in which new cells are formed. We have already alluded to Prof. Huxley in connection with Wolff. We find however, in the same paper (1853) some views of his own which in this connection are worth considering, to wit: "Vitality the faculty, that is, of exhibiting definite cycles of change in form and composition, is a property inherent in

certain kinds of matter. There is a condition of all kinds of living matter in which it is an *amorphous germ*—that is, in which its external form depends merely on ordinary physical laws, and in which it possesses no internal structure.” He termed the cell nucleus the “endoplast,” and the cell wall the “periplast,” which of necessity implies a vesicle with a “central particle.” That there is no “evidence that any attraction or other influence is exercised by the one over the other,” the changes which each subsequently undergoes though they are in harmony, having no casual connection with one another. “We have therefore maintained the broad doctrine established by Wolff, that the vital phenomena are not necessarily preceded by organisation, nor are in any way the result or effect of formed parts, but that the faculty of manifesting them resides in the matter of which living bodies are composed, as such ; or to use the language of the day, that the vital forces are molecular forces.”

In J. Hughes Bennett’s (1855) “Practice of Medicine,” he says : “The ultimate parts of organization are not cells nor nuclei, but the minute molecule from which these are formed. They possess independent physical and vital properties which enable them to unite and arrange themselves so as to produce higher forms. Among these are nuclei, cells, fibres, and membranes, all of which may be produced directly from molecules. Prof. Bennett believed in the spontaneous origin of animal life which position he openly advocated.

In 1856 Todd and Bowman published the results of their researches, but the conclusions arrived at were in no essential features different from some of those previously given.

About two years later (1858) Virchow published his “Cellular Pathology.” According to him the cell is the only possible starting point for all biological doctrines. The cell can only originate from a previously existing cell, taking its primary origin from the ovum. The typical cell as described by him consists essentially of “cell wall,” “cell contents,” and “nucleus.” The *nucleolus* he did not consider an essential constituent of the cell. The object of the “nucleus” he considered as entirely connected with the *life* of the cell, that which maintains it as an element, and from which other

cells were produced. While to the cell contents, aside from the nucleus, is due the function of the cell, that to which is due the contractility of muscle, the neurility and sensation of nerve, and the secretory offices of the gland cell.

Dujardin had, in 1835, discovered in the lower animals a living, moving, contractile substance which he called "*Sarcode*." The peculiar appearances of this substance attracted the attention of many observers. It was thought peculiar to the lower animals, and there was assigned to it a property of "irritability without nerves." The discovery which, however, followed, of similar movements and changes in form, in colorless blood-corpuscles, pigment cells and elsewhere, led Kolliker to express the conjecture that the contents of all cells are contractile.

In 1858, Max Schultze first showed the analogy between "*Sarcode*" and the contents of the animal cell, and that the entire infusorial world, simple or compound, is made up of cells, which he defined as "*protoplasm* surrounding a nucleus." "The cell leads in itself an independent life, of which the protoplasm is especially the seat, although to the nucleus also undoubtedly falls a most important though not yet precisely determined rôle. Protoplasm is for the most part no further distinct than that it will not commingle with the surrounding medium, and in the peculiarity that with the nucleus it forms a unit."

In April and May, 1861, Professor Lionel S. Beale delivered the lectures before the Royal College of Physicians of London, in which he promulgated his views, which have since been more or less elaborated, and which have become associated with his name. The "cell" or "elementary part," as he prefers to call it, is composed of matter in two distinct states, viz., matter which is forming, and matter which is formed; matter which has the power of growing by producing matter like itself out of pabulum or food, and matter which possesses no such power, but results from the death of the forming matter. The former is known as germinal or living matter, the latter as formed matter. The former in varying quantity in different cells, is central in its situation, and includes what has been called by other observers nucleus, cell contents, protoplasm, endoplast, etc. The latter, also

present in different quantity in different cells is peripheral, and includes what is known as cell wall, periplast, inter-cellular substance and products of secretion. He is of the opinion that the amœba, the mucus-pus and white blood corpuscles are composed almost purely of "germinal matter." In its endowments and properties, germinal matter is acting, living, growing, and moving, through some inherent power of its own. It alone, as he believes, is capable of producing material like itself out of pabulum, and of multiplying by division, or dropping off a portion of itself, which portion assumes an independent existence, and grows, maintains, and reproduces itself like the parent germinal matter. This germinal matter is capable of being stained with an ammoniacal solution of carmine; the latest formed or central portion staining more deeply than that portion immediately surrounding it, and the further from the centre of the mass, the lighter is the colour, until the formed matter is reached, which takes no colour at all.

It must be understood that what is called nucleus by Virchow and others does not constitute the whole of the germinal matter of Beale.

(*To be continued.*)

NOTE UPON AN INSTRUMENT FOR SEPARATING THE TEETH.*

By DR. E. A. BOYNE, of New York.

Mr. President and Gentlemen of the Odontological Society of Great Britain.—I believe it is generally conceded that the normal form and position of the human teeth are such as are best calculated to resist the destructive tendencies which surround them. When, however, decay has attacked the teeth upon their approximal sides, the difficulties of restoration to the normal form have been so great as to discourage many from ever undertaking it. The consequence has been that, for obtaining access to very small cavities of decay, great slots, or V-shaped spaces, have often been filed between two teeth, which slots have afterwards been receptacles for the

* Read before the Odontological Society of Great Britain.

debris of food and the nidus of decay. A more careful class of operators have used wedges of cotton, tape, or wood, until space was procured, and then placed a wooden wedge at the margin of the gum between the two teeth to be operated upon. This process is both long and painful, and is not always certain.

Some ten or twelve years ago, Dr. Jarvis, of New York, devised an instrument to separate two adjoining teeth by means of a screw, so that an examination could be made or a wedge inserted.

Shortly afterwards, Dr. Perry made an improvement upon the form of the instrument, but it was still not applicable to the majority of cases.

With the consent of both these gentlemen I have undertaken to improve the device still further, and this evening take pleasure in presenting for your examination an instrument that I have used for the last four years, with great advantage to myself and an enormous saving of pain and tooth substance to my patients. I have recently made some further modifications in the form and size of the instrument.

It is a question of applying the force gradually, to separate the teeth without touching the gums, in order to obtain, little by little, the necessary space, and, once obtained, to have room enough to work without being hindered by the instrument itself.

If we examine the dental arches of a well-developed subject, looking at the maxilla horizontally, we find that the arch of the lower jaw presents three different curves.

The first is represented by a line commencing at the upper end of each canine and describing a curve that is convex towards the upper jaw ; the two other curves are indicated by the molars, which present a curve with the concavity looking downwards.

In the upper jaw the same curves exist, but reversed ; and we have besides a curve from one canine to the other which is convex on the labial side, while the molars have, on the contrary, a concave curve.

It must be remembered also that the length of the teeth varies considerably in different individuals. For these various reasons it is easy to understand the difficulties in the way of

a perfect adaptation of the instrument to all mouths ; hence the advisability of having several to suit different cases. The one upon the incisors has two small screws to adapt it to the varying lengths of teeth, and so to raise the instrument, by letting these small screws press upon the ends of the teeth, that the points of the separating claws shall not impinge upon the gums.

The one showing the cavities in the molar and bicuspid is shaped so as to rest upon the ends of the teeth, and the pointed ends of the claw are just the length of a short tooth below the middle of the bow.

The last example shows a wider bow farther removed from the cavity to be operated upon, and out of the way of all instruments, with the points of the claws a little further from the middle of the bow, thus adapting it to lower back teeth and to long upper teeth. The distance between the points of the claws varies according to the class of teeth it is to be used upon ; for incisors the points would have to be from 4 to 5 millimetres apart, while for molars they might need to be 7 or 9 millimetres, or even more in some cases.

I find that in many cases, if the teeth to be operated upon can be separated with cotton or tape for one or two or more days before the operation, the screw separator being then applied holds them steadily and firmly while the operation is being performed, and so painlessly that patients often go to sleep during the operation. Of course one is thus enabled to go on much more rapidly, and with less fatigue to both parties. When the fillings are in, another turn is given to the screw and room obtained to finish the cervical margins by means of Dr. Smith's discs, that cut only upon the outer edge, and by the use of polishing tapes and sharp lancets. Upon taking off the separator, there remain two knuckles of gold or other filling that touch each other like two apples side by side, over which the floss silk and the brush can pass readily to completely cleanse the entire circumference of the filling, while these two contiguous fillings, restoring the original or the ideal form of the tooth, effectually prevent the disagreeable or painful crowding of food between the teeth and under the gums, to their detriment.

British Journal of Dental Science.

LONDON, FEBRUARY 15, 1885.

DENTIST AND PEDLAR.

In one of Ralph Waldo Emerson's most charming essays he treats upon "Circles." All things, he says, move in sinuous curves. Nature has no angles, no roughnesses, all her handiwork shows her addicted to circling the universe. History itself moves in circles. In early days—the good old days let us remember, when gas bills were not and an umbrella was as rare a sight as an anaconda in Piccadilly—dentists would foot it from village to village and ply their primitive arts. The village blacksmith, so ideally sung, was often the village dentist and then the nomadic tooth-puller, for in those days he was little else, usually fared ill. He drew few teeth in that village and ran no inconsiderable risk of having his own summarily removed without option of refusal. However, we fancied these good times had passed away never to return. We had vague impressions that dentists of to-day were professional men, not unscrupulous traders and unlicensed hawkers. Is it too much to expect that among those calling themselves dentists that the etiquette, the careful recognition of the boundary line between practice and trade should be clearly understood, and as thoroughly protected? And yet our readers will find in another column an account of how a person practising dentistry is alleged to have actually employed a paid tout whereby to bring grist to his mill!

We trust for all our sakes the story admits of some more favourable explanation than appears upon the first blush. At the same time such straws indicate that the winds still blow into corners of the profession which are very far from worthy the position dentists at present claim. It was said not many years since that medical men could not be made peers, because they belonged to a class of men whose tail was too disreputable for the society of the nobility. And does not this taunt come home even more strongly to us. Can dentists ever hope to assume a social position worth the having so long as dentists' pedlars go atramp the country.

Personal merit will of course raise him, but it does so raise him simply by virtue of the profession to which he belongs. Yet such should be the case.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.—The following members were elected as officers and councillors for the year 1885, on the 12th instant. President, C. Spence Bate, F.R.S., Plymouth; Vice-Presidents (resident), T. Charters White, George Gregson, Henry Sewill; (non-resident) J. T. Browne-Mason, Exeter; Richard White, Norwich; Andrew Wilson, Edinburgh; Treasurer, James Parkinson; Librarian, Felix Weiss; Curator, S. J. Hutchinson; Editor of the Transactions, J. Oakley Coles; Honorary Secretaries, David Hepburn (Council); Robert Woodhouse (Society); Storer Bennett (for Foreign Correspondence); Councillors (resident), F. Canton, Alex. Cartwright, Chas. S. Tomes, Wm. St. George Elliott, Augustus Winierbottom, Samuel Cartwright, A. Morton, Smale, J. Howard Mummary, Arthur S. Underwood; (non-resident) J. F. Cole, Ipswich; G. C. McAdam, Hereford; W. E. Harding, Shrewsbury; Robert Reid, Edinburgh; J. R. Brownlie, Glasgow; J. H. Whatford, Eastbourne.

STRICTURE OF THE ŒSOPHAGUS.—At a recent meeting of the Clinical Society, Mr. Charters Symonds read an account of a case of a malignant stricture of the œsophagus, in the treatment of which he employed a new permanent catheter. The patient, a man of 40, began to suffer from difficulty in swallowing, which continued for seven weeks, when he came upon treatment. No bougie could be passed at first, when, however, one was introduced, and an ordinary œsophageal catheter was introduced it occasioned great irritation both in the air passage and the gullet. To obviate this, a gum elastic catheter, six inches long, was fitted with an expanded funnel-like extremity, having its external diameter from half to three-quarters of an inch. The tube was passed through the stricture and the funnel allowed to rest upon the upper end of the stricture. The whole was secured by a silk thread looped round the ear. Mr. Symonds found this tube was well borne, and was free from the inconveniences of those in common use.

ASEPTOL.—The *Medical Record*, of New York, says: A phenol compound, termed orthoxyphenylsulphurous acid, has been recently introduced into therapeutics under the name of "aseptol," this title having been given to it on account of its remarkable germicide qualities, which excel those of carbolic and salicylic acids. Aspetol is an amber-coloured fluid, of a density of 1,400; it has a slight odour, but is more pleasant to the smell and is less poisonous than carbolic acid. Last November, Drs. Leroy, and Van den Shrieck, of Antwerp, studied the therapeutic applications of aseptol and reported most satisfactory results as an antiseptic. It has the following advantages over antiseptics in common use: 1. It is very soluble in water. 2. It is very slightly caustic. 3. It is free from irritative qualities, and may be applied for a long time to the skin, the eyes, the bladder, etc. 4. Finally, its slight toxicity, which permits its use internally in considerable doses, and also the application of concentrated solutions in diphtheritic pharyngitis and laryngitis.

ENLARGEMENT OF THE TONGUE IN RHEUMATIC FEVER,---A rare symptom or sequel of rheumatism is glossitis or inflammation of the fibrous tissue of the tongue. The organ enlarges rapidly, filling the mouth and at first impeding articulation, while later it completely prevents the patient from expressing his wants or sufferings. A more dangerous result of this tongue enlargement is the impediment it offers to respiration. The cushion of the tongue arching back over the larynx suffocates the sufferer. Deglutition although constantly attempted is performed with much difficulty. The diagnosis although difficult unless this rare disease is kept in view, becomes easy when a history of rheumatic pains and previous seizures can be elicited. Salicylic acid is said to be the most effectual remedy.

AFFECTIONS OF THE GUM IN RELATION TO OTHER DISEASES.---Dr. Karzosowski, says the *London Medical Record*, draws attention to a connection existing between gingival affections and certain other diseases. In four of his cases, chronic gingivitis caused the occurrence of hallucinations, melancholia, nervous excitement, and insanity. Extraction of destroyed teeth and appropriate treatment of the inflamed

foul gums were followed, in each of the cases, by restoration of health of the nervous system. Further, the author saw several instances where affection of the gum led to general septicaemia. He thinks generally that premature senile debility of the organism may often depend upon dental caries, leading to absorption into the system of septic products of slow decomposition.

DEATH FROM NITROUS OXIDE GAS.—The occurrence of a death under nitrous oxide has lately caused a good deal of excitement in Paris. A retired magistrate, named Lejeune, went to a M. Duchesne, a well-known advertising dentist of Paris, to have a tooth extracted. Gas was administered, and the operation performed; it was then discovered that the patient was dead. From the fact that there was no appearance of hæmorrhage when the extraction took place, it is inferred that death must have occurred just prior to the operation. An examination of the body was made by Dr. Brouardel, but so far as we can learn, his report has not yet been made public. Judging, however, from the statements which appear in the French journals, death would seem to have been quite sudden, and to have been due to syncope, or failure of the heart's action, caused by the fear or the shock of the operation. One result of this unfortunate occurrence has been says the Editor of the *British Medical Journal*, that a discussion has arisen in the French papers as to the right of dental practitioners to administer anæsthetics. It appears that, as a matter of strict law, only legally qualified practitioners of medicine are allowed to administer anæsthetics in France, but that this law has seldom been put in force against dental practitioners, even with reference to the use of chloroform and ether. The use of nitrous oxide is not expressly forbidden; and, owing to the general impression that it was free from danger, no question has hitherto arisen as to its use. Whether any attempt will now be made to impose restrictions remains to be seen. Another point referred to in this correspondence is one of which we have repeatedly pointed out the importance, namely, the necessity for the presence of a third party, whenever an anæsthetic is administered, to give assistance in case of accidents, and

also as a witness. Cases illustrating this point have so frequently come under our notice, and we have referred to the subject so often, that we hope it is unnecessary to say more.

MEDICAL HONOURS.—The Emperor of Germany has been pleased to confer a distinctive honour upon Sir Joseph Lister, and so indirectly upon British Surgeons. The illustrious baronet has had conferred upon him the “Ordre pour le Mérite” for Science and Art.

Reviews.

The Mouth and Teeth in Health and Disease. By J. Morley Dennis, F.S.S., Surgeon Dentist to the Grimsby and District Hospital; Simpkin, Marshall & Co.

This book is intended by its author for the guidance of the public. To tell them when their teeth are out of order and to warn them of the consequences if nature's inexorable laws be gainsaid. The idea is good and the little volume as far as it goes fulfils its function well. All practical men must over and over again, have to deplore that patients had not come into their hands sooner. As a rule, persons, unless specially educated concerning the importance of dental hygiene, evince a deplorable lack of common sense about the care of their teeth. To the thoughtful and intelligent reader Mr. Morley Dennis' book will open many interesting fields for further enquiry, as its range being narrow, it of necessity passes over many matters of dental hygiene in a cursory way. Mr. Morley Dennis has written a useful book for the purpose he had in view. He does not present any novel facts or fresh speculations but gives us the old well worn dicta of dentistry, clothed however, in a readable and agreeable form. Were we disposed to quarrel with the book we should attack it for its brevity. In some sections it seems to us that further elaboration and extension would have subserved a useful end. We would instance the care and treatment of the teeth of children, a subject upon which there exists so widely spread a need of enlightenment among the laity. We may hope for such additions when Mr. Morley Dennis meditates a second edition of his book.

Dental Cosmos. A complete index to the *Dental Cosmos*.
Compiled by James E. Dexter, M.D.S. ; at the instance
of A. L. Northrop, D.D.S., M.D.S. Vols. I to XXIV.,
inclusive. Philadelphia; the S. S. White Dental Mfg
Company, 1883.

The *Dental Cosmos* has justly for some years held a very high position both in American literature and among English dentists. To all who know the journal, its wide range and cosmopolitan proclivities, are too evident traits of its usefulness to need emphasising, and so the appearance of this indeed will be welcome to many. It ranges from vol. I to XXIV, and is most exhaustive. It has thus a double function, it directs the reader of the *Cosmos* and further serves as a ready means of reference to those "looking up points" or researches. In these days when minutes are so precious that one wonders how grass ever could have grown in Fleet Street, we must needs employ time saving machinery, and in the complete index to the *Dental Cosmos* we possess a most valuable example of a volume of that class. The immense labour the compilation of so exact an index is unknown save to those whose fate has led them to attack the most hydra-headed of all tasks, compiling the inventory of a book. Let us remember that here we have an inventory out of twenty-four books !

Abstracts of British & Foreign Journals.

INDEPENDENT PRACTITIONER.

PERSONAL RECOLLECTIONS OF A DENTIST OF THE EARLY DAYS.

By Dr. L. W. Bristol, Lockport, N. Y.*

[Published at the request of the Societies.]

The paper commences by saying that : "The practitioners and students of dentistry of the present day know little of the difficulties and disadvantages under which those practising fifty years ago laboured. Without dental colleges or depôts, the country dentists travelled with their 'kit' under their arm.

* Read before a Union Meeting of the Seventh and Eighth District Dental Societies of the State of New York, held in Rochester, October 28 and 29, 1884.

Human teeth, procured from the battlefields or hospitals, preserved with spirits of camphor were then employed. The teeth of neat cattle, or carved out of a block of hippopotamus ivory were also in vogue.

Dental laboratories were closed against all, no other dentist was ever admitted. Dentists never recognised a lady or clergyman, in public, however intimate they were in private, lest any might say, 'he has been putting in teeth for them.'

The Quakers quoted 'An eye for an eye, and a tooth for a tooth,' to show it was sinful to oppose the will of God by an attempt to replace it by artificial means.

Anyone in those days could become a dentist. He had however, to construct his own armentarium. A piece of work done by another dentist was examined carefully and closely. In 1833, the author went three miles to see a man who had two false teeth. They were made of 'sea horse,' and attached to adjoining teeth with fine gold wire that had cut the teeth they were attached to nearly one-third off.

"I have instruments in my possession to day that I made forty years ago, and they are yet doing good service. Many an engagement have I filled by sneaking around just at daylight; by the back way into a back chamber, to prepare and insert two or three teeth for a young lady, making a long tedious day of it, always stipulating that the cross dog should be chained or shut up.

We first, by measurement, fitted a block by the right curve to fill the space to be supplied with teeth, and then, with a camel's hair pencil dipped in rouge mixed with alcohol, painted the gum and pressed the block on to receive the red impression, then carved, scraped, gouged and dug, painted and tried again, and so on, until a perfect fit was secured. We then proceeded to carve out the teeth, leaving the enamel in front. We saved every root, and pivoted to it, sometimes fitting six teeth to two roots. If the roots were gone, we tied the blocks in with silk thread, or gold wire.

Pivoting and bridging were carried to great lengths. I well remember when a great discovery was the mode of taking an impression of the mouth with wax, and pouring in calcined

plaster of Paris, that was a most wonderful discovery, and it was kept a secret for a long time.

The old French Bellah teeth came next to the front. They had a muddy, dead look. They were mounted on gold plate with a dowel pin soldered to the plate, and this soldered to the platina clamps baked in the tooth. Then came the Stockton pivot teeth, which possessed a life like appearance. We struck up a plate, soldered the gold pins, and attached the teeth with hickory plugs; immersed them in water twelve hours or more, and then with a good deal of anxiety removed the plate and examined to see how many had burst by the swelling of the wood. We always directed our patients to keep them wet. If the patient was ill, and by carelessness the teeth were suffered to get dry and tumble off, they were brought back to be again put on where they belonged and it was quite a job sometimes to get them right."

Stockton sent out his teeth by the peck; he also invented the single gum teeth with platina pins baked in. When Stockton first made his discovery he then sent out pedlars to sell his pivot teeth at a reduction, when his stock was all sold he produced his new teeth, which superseding the others obliged the unhappy dentists to sacrifice their old purchases and buy the new.

About 1834 the dentists began to establish offices, or rather rooms, usually at their residences or boarding houses. Students' had to pay high fees for instruction. Dentists in those days never attempted to extract teeth without some one to hold the head. Replanting and transplanting teeth were then used, scrofula and other diseases were thought to be introduced with the teeth and so the practice was given up. In filling teeth lead was used pounded very thin, and tin foil.

About the year 1833 or 1834, the notorious Crawcours of London and Paris opened an office in New York, and for six or eight months made a small fortune by filling teeth with amalgam, asserting its qualities to be that of 'making a stump into a sound tooth at once, as if by magic!' They called the compound 'the Royal Mineral Succedaneum.' These Crawcours were the father, mother, brother, and sister of the amalgam practice. They used the old French five

franc pieces, filed up and mixed into a soft paste with mercury. Many people who had good serviceable gold fillings, that had stood a long time, had the gold dug out and the amalgam substituted, 'because the gold showed.' These Crawcours had a successful run of it. They were not dentists, and knew but little of the profession.

When the gum block teeth of Dr. Harrison of Lockport were introduced, Dr. Bristol strove to perfect the process but speaks discouragingly of it.

The method of John Allen, of New York, had the advantage of using teeth already baked. A platina plate was swaged, the teeth backed with platina and soldered to the plate with fine gold foil. 'The interstices were filled with a granulated body, the piece invested in asbestos and plaster of paris, and baked. Then it was enameled and baked again but to an experienced eye, in a strong light, cracks or checks would be apt to show on cooling. By oiling the block the checks would not show ; but time and human saliva are very searching, and when a plate began to give out it went all to pieces. It had one advantage ; it could be re-enamelled and baked again.

About 1835 or 1836 creosote was introduced to the public, and created a good deal of interest. Some dentists averred they had abandoned extracting teeth.

A great many discoveries and some valuable improvements were made. One dentist, in an eastern city, had very delicate instruments with which he "cut the ligamentum dentatum," and the teeth tumbled out easily, and patients would ask "have you got an instrument to cut the ligamentum dentatum ?"

In 1837, a dentist by the name of Jacks, of Catskill, invented and patented a double air-chamber plate along the alveolar ridge. This chamber was perforated with one-eighth inch holes about half an inch apart, and soldered to the main plate. The patient sucked the gum into the holes as one would suck a key on the lips, and, if worn long enough, the 'teat' would become strangulated and drop off, remaining in the cavity of the chamber which became intolerably malodorous from accumulation of putrefaction.

THE SOUTHERD DENTAL JOURNAL HEREDITY.

By MRS. M. W. J.

The different types of teeth and forms of jaw not only are racial traits but belong to families and are transmitted by heredity : hence the importance of the study of heredity in dentistry, individual abnormalities in the teeth are pretty sure to recur.

Dr. Macguillen cites a case in which the superior lateral incisors stood within the arch, striking inside the inferior lateral and canine ; all the children of the victim of this deformity showed the same peculiarity.

Dr. Millar cites a case, a family of five children all more or less affected by abnormality, *i.e.*, superior incisors and canines produced so that a space between the upper and lower teeth of nearly half an inch appeared when the jaws were shut. Dr. Watts cites a case of a family whose female members were without left upper lateral incisors, this persisted through four generations.

Commonly, it is said, the father gives abnormalities to the teeth, to this there are exceptions, maternal dental peculiarities sometimes being transmitted to her offspring. Thus in a case which is related a lady and her three daughters all had the left upper lateral incisors badly decayed while all the other teeth were sound. It is stated that the offspring of massive fathers who had delicately built wives, possess large teeth set in small jaws, hence arise overcrowding and irregularities.

The moral is, says the writer, to early teach your children the laws of heredity that they may learn to select husbands and wives physically suited to their own physique.

DEUTSCHE MONATTSCHRIFT FÜR ZAHNHEILKUNDE.

THE NARROWING OF THE ARCH OF THE JAW,
by C. KUHN, Hanover.

The applause which Herr Kuhns obtains in the regulation of teeth, caused him to make known his simple but useful method. As Coffins' experiments for widening the jaw arch have been widely spread, experiences on the narrowing of the jaw arch ought to awaken a similar interest.

The apparatus used hitherto worked principally by means of a caoutchouc ring laid round the teeth, whereby only in the most favourable cases a diminution of the jaw arch is obtained; or by means of a screw placed in front of the teeth which must daily be drawn backwards, which were not elastic and might be dangerous for the teeth; or by means of metal bands placed round the dental arch, which must daily be shortened. The necessity of the dentist's constant watching over these methods of treatment made it impossible for out patients to be thus treated, as the treatment for the narrowing of the jaw arch was one of a long duration.

The single case of which Herr Kuhns has heard as being treated in a similar method to his own, was one by Professor Richardson in which he drew in to the tooth arch two side incisors. The case was not known to him at the time, and his experiments deserve to be known on account of their simplicity. The jaw arch which is too wide is as a rule relatively so to the other, whilst either the upper or lower jaw projects to a certain extent beyond bounds, being larger than its normally formed opponent.

The following striking case will afford an example of the method. The case was that of Frau Von V—— aged forty years, whose appearance was so disfigured by her teeth that she could not appear at Court. Through the loss of molars and the raising of the articulation on account of the molars and bicuspid, her normal appearance was changed, and she was unable any longer to cover her teeth with her lips. To prevent this very disagreeable effect it was found necessary to regulate the projecting teeth.

The first condition in narrowing the alveolar arch consisted in creating a place for the crowded teeth; as a rule with strongly-developed alveolar borders the incisors and canine teeth are separated by intervals which sometimes are also found between the bicuspid. If no interstices exist, one or two teeth must be removed to make room. Then an impression is taken with Stent's mass, which is laid on a thin layer of gutta percha. In every regulation a second impression should be taken, and the model fastened to the articulation with a hinge.

It is very agreeable to this purpose to lay on the model a

thin layer of plaster about 4 mm. broad behind the teeth under operation, in order that the plate may not set too firmly. This is done by separating the gutta percha with a sharp knife from the Stent's mass.

Then a plate is prepared which overcaps the molars, and reaches so far forward that only the teeth to be regulated, including the spaces which have been procured or have already existed, remain free. On each side of the wall which covers the teeth and the continuation of the alveolus, are two vulcanised metal buttons one centimetre from one another; the under one must be on the same level with the edge of the teeth. Of the prepared cap behind the teeth under regulation, so much must be cut away as to leave sufficient space for retreating. When the plate is so exactly adjusted that it sits firmly in the mouth, an elastic caoutchouc strip of about the thickness of a millimetre, 1-5 c.m. broad, is buttoned over the metal buttons.

At every corner corresponding to the buttons, holes have been made. The effect of the strip of caoutchouc can be easily regulated by its length; if it has become too wide the patient can shorten it himself. In any case care must be taken that it is wide enough.

The following case is one of strongly-developed bone formation. Before treatment the under incisors articulated 5 m.m. behind the upper, and hurt the mucous membrane almost daily. The out patient, a young lady of nineteen, regulated the strength of the pressure by shortening the band herself. After seven weeks the spaces had disappeared through the backward pressure of the teeth. The alveolar arch measured from one molar to the other was shortened about 8 m.m., the under incisors touched the masticating summit of the upper and were pressed back quite 5 m.m. The very protruding prominent set of teeth were reduced to modest dimensions, and the patient's appearance greatly improved.

MR. TOMES IN AMERICA.—Mr. Tomes, has, we understand, met with a very hearty and flattering reception in America. At a dinner recently given in his honour, some very complimentary things were said. Few, if any, can take a higher rank among representative dentists of England than does Mr. Tomes. Respected alike by his fellow-workers and by scientific men in general, he has advanced the profession alike in the estimation of the professional and lay public.

Literary Notices and Selections.

BUCCAL BREATHING—ITS CAUSES, SERIOUS CONSEQUENCES, PREVENTION AND CURE.

By GEORGE W. MAJOR, B.A., M.D.

The habit of breathing through the mouth, instead of through the nose, is so very prevalent, and its serious results so little appreciated, that I have been induced to make it the subject of a few remarks before this association. The first breath of life is taken through the nostrils, and if this precedent should not prove sufficient to satisfy us of the natural mode of respiration, let us refer to Genesis, where we learn that at the creation of man "He breathed into his nostrils the breath of life." The instinct of the savage mother leads her to carefully close the lips of her sleeping infant, lest the cold air might prove injurious should it enter the lungs by the passage of the mouth.

The professional trainer insists upon the athlete breathing with closed mouth. The fireman entering a burning building carefully avoids speaking, or the parting of his lips. It is recorded that one may breathe mephitic air for a short time through the nose, if the lips are firmly sealed. The army surgeon requires the raw recruit to undergo, in his examination, physical fatigue with closed lips.

All these decisions have been arrived at as the result of observation, though no doubt to many of those who insist that under certain circumstances nasal respiration should be strictly observed, the true reason for this precaution may be quite obscure, or perhaps entirely unknown. Nine out of every ten persons will tell you that the nose is the organ of the sense of smell, quite oblivious of the more important function of respiration.

This question of oral respiration is one that has not even at this late day received at the hands of the profession the study and research it truly merits. If it is the result of mechanical obstruction of a permanent nature, it is not a habit, but an unfortunate necessity; but on the other hand, temporary nasal swellings often develop a habit which is unconsciously and innocently pursued with the most serious results

to health and development. Any one of a number of conditions may singly give rise to oral respiration, but we generally find more than one present before man allows himself to be converted into a mouth-breather.

In the human economy the nose performs several important functions, the chief being that of a respirator. It purifies, moderates the temperature and moistens the air before it reaches the sensitive larynx and lungs. It purifies the air by arresting foreign and irritating particles in their passage through the cavities of the nose. It moderates the temperature of the air by rendering it as nearly that of the human body as possible. It moistens the air by virtue of the secreting power of its lining membrane and glands.

An example of its first influence may be had in the fact that in oral respiration dust will lodge in the pharynx and larynx that under otherwise normal conditions would scarcely, if at all, gain an entrance to these organs. Of the second, on going into the cold outer air of winter, a single breath through the mouth will, by its impact provoke cough and a sensation of coldness, which, if taken through the nostrils, would be so moderated that on reaching the lower border of the palate it would give to one's sensation no appreciable difference of temperature, and could be breathed with comfort and impunity. Of the third, if from any cause nasal respiration is impeded, say during the night, we rise with dry, harsh palate, tongue, and throat, the secretion of the buccal mucous being neither so constituted nor sufficient to moisten the air and keep the parts themselves in a healthy state.

The mouth was alone intended for the taking of food and speech; it is, therefore, not very remarkable that many and baneful results should follow in the wake of those who violate the natural laws by putting parts to uses for which nature never intended them.

Certain physical deformities result from this habit, aggravated in the same proportion as that in which this hurtful method is practiced. Among these may be mentioned general debility; malnutrition, as shown in spare habit of body and undersize; deformed chest, with prominent sternum, sunken sides, retraction at the line of attachment of the dia-

phragm, and rounded shoulders. The upper lip is more or less shortened, the mouth open to a greater or less degree, the upper central incisors generally prominent, with irregular development of the symphysis of the upper jaw. The alæ of the nose are thin and flattened, and the muscles of the nose and its neighbourhood wasted. These conditions are always more marked on the side of greatest obstruction. The face presents a pinched expression. We always find an expression of stupidity in aggravated cases, with loss of memory occasionally—these two latter possibly the result more of internasal pressure than of mouth breathing directly.

Dupuytren many years ago associated pigeon-breast with large tonsils ; but in point of fact any interference with nasal respiration, be the cause what it may, will, if of sufficient gravity produce this deformity. In addition to the appearance laid down as indications of oral respiration, I have observed an abnormal acuteness in the development of the upper jaw, whereby the hard palate is of great vertical depth, with corresponding narrowing from side to side. The central incisors in this class of cases are not prominent, but usually show at the middle line near the margin of the gums a point of decay.

It is also worthy of passing comment to note the frequency with which we encounter decay of the upper teeth. According to my idea this is largely dependent upon mouth-breathing. I do not think the prevalent opinion, that the cause lies in the escape of corroding gases from the stomach, is altogether a correct one. An offensive breath, in my experience, arising from the stomach, is somewhat infrequent. The odour if not of decayed teeth, is most probably that of decomposed nasal or pharyngeal secretions, the tendency to change being manifest in disordered constitutional conditions, especially if accompanied by any elevation of temperature. The injury to the upper teeth may be regarded as the result of dryness caused by the passage of air between and around them, facilitating decomposition of any food present, and favouring the formation of acids capable of reacting vigorously. The lower teeth are protected by the lip and tongue, and moistened by the saliva, and are therefore free from the evil influences exerted above.

The injury to digestion, as a direct result to impairment of the power of mastication, at once suggests itself. It is not during the day only that the subject of oral respiration suffers ; at night the aggravation is intensified. The position of the body during sleep favouring, as it does, increased flow of blood to the head, the result is increased difficulty, as shown by the open mouth, snoring, and general restlessness, the latter the direct result of deficient oxygenation, assisted no doubt by the fact that during sleep the voluntary respiratory muscles used during the day are no longer available.

I trust I shall not be considered as taking an extreme view if I should state that after a careful inquiry I have found that in a large proportion of mouth-breathers involuntary micturition during the night is not unusual. This latter, of course, is attributable to carbonic acid-gas poisoning—the sensitive air-passage refusing to take in the cold, dry, impure air, and as a result, there is deficient lung expansion and aëration. It is unnecessary here to enlarge upon the consequences of deficient oxygenation, they are patent to every one.

The principal causes that lead to mouth-breathing are the various deviations of the nasal septum ; ecchondrosis and exostosis of the nasal fossæ ; hypertrophy of the turbinated bones or of their soft tissues : dilatation of the various sinuses, whether of a permanent or temporary character ; tumours of various kinds, known as polypi ; œdema of the septum, particularly common at its posterior border ; overgrowth of the erectile tissue of the posterior terminations of the lower turbinated bones ; adenomata of the vault of the pharynx, being an hypertrophy of Luschka's tonsil ; growths in the same region, the most common being fibroids and hypertrophy of the buccal tonsils.

As the habit of mouth-breathing is developed usually in early childhood, its prevention must largely depend upon the recognition by those in charge of the formation of an unnatural and hurtful method of respiration. In order to do this, mothers and nurses must first know that the nose is the proper channel by which air enters and leaves the lungs.

If the practice is merely the result of *habit*, induced by some temporary nasal or naso-pharyngeal obstruction, the simple closure of the mouth after clearing the nostrils will

generally suffice ; or if still more obstinately pursued, a bandage tied under the chin and over the head will serve to keep the jaws in contact. If there be, however, any mechanical impediment, as swelling, hypertrophy, or growths, they must be treated radically. The age of the child never should negative surgical procedure, as the consequences resulting from neglect of early interference may be fraught with very serious after-injury. In early infancy I have more than once used the galvano-cautery with the most satisfactory results.

It is manifestly the duty of the profession to teach the public that the nose is the organ of respiration; that it is also the organ of smell they will themselves discover. It now remains to briefly refer to the treatment essential for the removal of the obstacle to free nasal respiration. The first cause referred to and perhaps the most common, is deviation of the nasal septum. I may say that in practice it is almost the exception to see a straight one. Deviation of the septum may be single, double, or multiple, and this may take place in a vertical, horizontal, or diagonal line, or present so many irregularities as to occupy every possible direction.

In many cases, especially of vertical deviation, the angle at which the cartilaginous septum is bent is so acute that the nostril in which the convexity presents itself is often so perfectly close as to be utterly useless for any purposes of respiration; the prospective gain on the opposite side is neutralized either by an hypertrophy of the lower or middle turbinated bone and soft tissue, or perhaps by a second deviation posteriorly, giving the septum a sigmoid shape. As regards the side to which the deviation exists most frequently, statistics of over seventy cases compiled by myself, do not show any very special selection as to right or left, but to the left, if anything. No doubt exists in my mind that deviations are the result of mechanical violence—blows, or falls on the nose. Females, though presenting deviation, do so, for obvious reasons, very much less frequently than males, and also show a much less exaggerated type. In prize-fighters, or those who have engaged much in boxing, the cartilaginous septum is bent into every possible shape, without very severely affecting nasal respiration or the external form of the nose. In these cases the cartilage is telescoped down-

ward much on the principle of a mast, but without radically closing the side passages. It has seemed to me that a vertical deviation is more likely to date from an injury received in childhood than from one later in life, and an analysis of cases strengthens this belief.—*New York Medical Record*.

A GAS FURNACE FOR FIRING DENTAL ENAMELS AND PORCELAINS. CAUSES OF "GASING" IN FIRING TEETH.*

By WILLIAM HERBERT ROLLINS.

The two subjects are combined because by means of the former I have been able to discover the latter.

The furnace will give a heat from a dull red to a light so bright that an object in the muffle is invisible. The furnace consists of a cylinder of sheet iron ten inches in diameter and eleven inches high. It has a handle and an iron door. The cover is a similar cylinder two inches deep. Both are lined with porous fire clay two inches thick. The furnace walls have four holes in them. Three of these holes give passage to three tuyeres, the fourth is for a No. 3 muffle, the mouth of which is closed by an iron door lined with asbestos. The door is perforated by a platinum tube, through which passes the platinum trial rod with a small spoon end for the test piece. This rod can be withdrawn from time to time to look at the test piece. At the front of the furnace are two iron tubes, one for gas, the other for air. These pass under the fire-clay arch, where they are brought to a yellow heat by the waste gases as they escape through the slit in the top of the furnace. Each of these tubes divides into three branches at the back of the furnace where the gas tubes enter the air tubes. In this way three double tuyeres are made their mouths corresponding with the holes in the furnace. This arrangement is necessary, for if the heated air and gas are allowed to mix before reaching the mouths of the tuyeres these would be destroyed by the intense heat. A similar furnace for dental metallurgy will be described in another paper.

*Abstract of a paper read before the Society for the Advancement of Oral Science, June 21, 1880.

Anyone familiar with the metallurgy of iron will see that the principles which have been used were discovered long ago. The hot blast was invented by Neilson in 1830. Siemens used gas as a fuel, and heated both this and the air. Using the waste gases to heat the blast is not new. Naphtha has been used to increase the illuminating power of gas, and knowing this, its value for increasing the heating power would occur to anyone. Porous fire-clay was known in Strabo's time, though T. Fletcher, with his usual capacity for adopting other men's ideas and giving them no credit, has recently re-invented it.

Though the principles were discovered long ago they had never been used together, and by this new combination I have been able to do what has never been done before in a gas furnace, produce heat enough to bake teeth, and this, too, in so short a time as forty minutes from the time the gas is lighted.

CAUSES OF GASING IN FIRING MINERAL TEETH.

In my first experiments for making enamels for filling conspicuous cavities in teeth difficulty was sometimes found in making the enamel base of a pure translucent white. As the result of somewhat elaborate tests it was found that the gray or green tint was due to the reduction of some of the lead oxide. A similar difficulty was encountered when the enamel base was fritted with the metallic oxides necessary to give it the shade of the teeth. Here the oxides themselves were reduced.

It therefore seemed probable that the so-called gasing in mineral teeth came from a similar cause.

Many experiments and analyses were made to test the matter, and though it is not worth while to give these in detail, one experiment, which is easily tried, will be mentioned: After having made a furnace like the one described, light the gas and open the air valve. When the heat is high enough put an unbaked tooth into the muffle. When taken out the colour will be pure. Now diminish the oxygen by partly closing the air valve. Put in another unbaked tooth. When this is removed it will be found gased. The same result will follow with the air valve in the same position as in the first experiment if the supply of gas is increased. In experiments

with dental enamels and porcelains it is advisable to have a slight excess of air in the furnace. Where the colour used, as, for example, platinum, yields the proper tint in the metallic state, this precaution is unnecessary, as in these cases the colour has no oxygen to give up.—*Boston Medical and Surgical Journal*.

INFLAMED AND SENSITIVE TEETH.*

By John T. Codman, D.M.D., of Boston.

“First principles are necessarily assumptions ; they cannot prove themselves,” says Froude. Individual instances may be proven by individual observation, investigation, or experience ; but the knowledge and application of a principle will solve the method of a thousand cases that would otherwise demand a thousand separate investigations.

My object in offering this essay is to try to present to you the principle that underlies the condition of inflammation applicable to a class of teeth not ulcerated ; not aching from exposure of the dental pulp ; not even decayed oftentimes but still painful and annoying, and offering no apparent excuse for their condition,—being teeth classed as aching from obscure causes ; as well as the condition applicable to a large number of ulcerated teeth.

Pain is always caused by pressure. This I assume to be a law or first principle applicable to living human bodies. I hardly feel it my duty to demonstrate this fact, but the observation of many years increases my faith in the correctness of this assumption. In this connection pressure is not only reefred to as that occasioned by blows or falls and their immediate results, but pressuæ due also to the reaction from injuries, shown in the enlargement of the part or parts injured, which is due to the increased flow of the blood, lymph, and nervous fluids towards the contused spot. Strictly speaking, there is no such thing as an inflamed or sensitive tooth. Only after years of professional life do I realise this fact. It has taken me so long to thoroughly disassociate the idea of pain in a tooth from what is ordinarily called the tooth—that is, from the actual tooth-substance, the bone, *i.e.*, dentine and enamel—that I may

* A paper read before the New York Odontological Society.

say it is only just lately that I have fairly realized it. Very few of us realize, when we strike the edge of our instruments across the flinty materials that constitute the exterior tooth, causing a spasm of pain to our patients, that these substances have no pain-giving power in them; for, when the members of our profession truly realize it, they will rise to a higher plane of practice, and have clear and unmistakable results, where now they grope in the dark.

Allowing these premises to be as stated, it is reasonable to ask the question, whence comes pain, and where is its source in a tooth? The answer is, always and every time from its fleshy constituents, and never from any other source. Try, then, to thoroughly realize that the lime and other mineral products of which the enamel and dentine consist have not a single element of pain-producing power in them; and then let us in our minds divide a tooth into two parts and we have then as is the fact, one part, the bone part, non-sensitive; the other part, the flesh part, sensitive. Consequently, all the tooth pain must be in the part which is truly flesh and sensitive. In this condition of mind we are ready to approach the subject of inflamed teeth, and will be able to comprehend at once that two conditions exist that may cause sensitiveness—in other words, inflammation—in the fleshy constituents that lie in and around a tooth; these being the only tissues that can be sensitive; the one condition being pathological, connected with the flesh part, and the other mechanical, connected with the mineral part; both occasioned by pressure, but from widely different sources.

I have been for years studying to realize practical results from this theory, keeping always first principles in sight, and getting a clearer vision as I proceeded. Simple as this theory appears, there is in it a wide field of study. It will be found to be a “high science,” for it involves within itself conditions produced by mal-occlusion; results of accidents occasioned by falls, blows, and injuries; inflammation of the periostium: congestion and ulceration of the same: inflammation of the pulp: strangulation of the pulp, and congestion of the same; dental abscess, etc.

Having disassociated the idea of pain from the bony tissues of the teeth, we can more easily associate the teeth

with the mineral kingdom, and can look on a tooth as a block of marble, a piece of stone, or anything truly hard that is placed in the jaw to crush food with.

We have thus two different ways of looking at a tooth, corresponding to the two different substances of which it is made—the one way as a sensitive and often a very highly sensitive organ, and the other way as an entirely non-sensitive one. Having made these distinctions clear to our minds—a thing harder to do than at first thought it would seem to be—we will proceed to consider the causes of sensitive teeth; or, in other words, the oversensitiveness in the fleshy constituents of the tooth organism and its immediate surroundings. Two principal causes here exist for sensitiveness—the one physiological, or pathological, if you prefer the latter word, and the other mechanical, or produced by mechanical means or causes; usually induced by the mineral irritant, the hard unyielding bone of the tooth; non-susceptible to pain in itself, but productive of any amount of pain as a mechanical irritant when in the way of nature's plans or standing between cause and effect. So closely are these results allied to physiological causes that we may write it down as an axiom that *all pain in a tooth that does not come from diseased conditions is produced by mechanical irritation*. By diseased conditions, in this connection, I mean inflamed and dead tissues, and I count congested pulps as dead tissues, as they are dead to all their uses, and can only pass into a stage of decay.

The so-called periostium, which lies beneath and around the ends of the roots of the teeth, is a sort of cartilage or cushion, being between two bones, as cartilages are; and I find that the firmness of the tooth is dependent on the thickness or the thinness of this cushion, and more motion will be found if the periostium is thick. It is elastic, and has the power of being compressed: but, in order to increase its compressive as well as its expansive power, nature has penetrated it with numerous blood-vessels, that enlarge it or contract it by the ebb and flow of the blood currents. Inflammation gives notice of disturbed normal conditions.

The question is often asked and labored attempts are made to answer it, What is inflammation? My answer would be that *inflammation is an attempt of nature to cure an injury*.

There is always an injury done before inflammation sets in. Then nature enlarges the vessels that carry pabulum and remove retrograded tissue. Inflammation cries ever, "More room, more room?" The larger the injury, the more room she wants and needs. There is the dead wood to gather and burn up, and she cries out, "Inflammatio—I burn." The dead matter that is not forced to the surface or carried off to other portions of the system is burned up in what is truly inflammation. In the meantime the pabulum-carriers and the tissue-builders, rushing along to do their work like a crowd in a thoroughfare, cause pressure on the nervous tissues, and they give notice to the storehouse of force, the brain, of the extent of the disturbance or injury.

Inflammation is always in the fleshy parts, to which dental pulps and periostium belong. We therefore direct our thoughts to these parts, seeking in them the cause of their irritation and pain. So much has our seeking been in this direction for the cause of inflamed teeth, that the fully as important, and, under the circumstances, the much more important, cause, mechanical irritation, has been largely overlooked, and therefore we should now give our thoughts to this branch of our subject; for I would like to convince you, as I am convinced, that, *all the inflamed and ulcerated teeth not having their cause in the deterioration of their pulps, and the poisoning of the periostium from contact through the circulation with their retrograded tissue, come from this cause.* This seems a broad statement, but I do not make it for effect. Neither do I make it without due consideration. Indeed I have been hoping that some other would have made it before me, and that I might confirm his judgment with my own. Not as an experiment, but after repeated trials and repeated successes, I offer this conclusion as one of the results of my years of professional study and practice, and trust the future experience of the profession will thoroughly confirm and justify it.

To cure the primary condition of inflammation from mechanical causes is an easy matter when understood. It is simply to get room and rest for the changed condition of the periostium. It is to observe the articulation and correct it to distribute the strike or occlusion evenly over the teeth, and

particularly to diminish the strike between the inflamed tooth and its antagonist until it becomes neutral or does not strike at all ; doing it rightly, sometimes not trimming off anything from the inflamed tooth, but all from its antagonist in the opposite jaw ; sometimes taking all from it, sometimes dividing the loss of inert substance between the two, and very rarely filing or grinding enough to expose any sensitive surface. It does not need that I should explain the mechanical means at hand to shorten teeth.

I know my critical friends on my right hand and my left will say that a tooth is *not* an inert substance. But in affirming that it is, I take into consideration the thorough knowledge of my audience on dental subjects, and trust in return that I shall have credit for so much of the same as not to be taken up on this technical point, as I have more regard for results than for theories.

To further explain, I will suppose a case. A patient comes in with an inflamed tooth, suffering from a dull, steady pain. It will probably be in the morning. The tooth, on examination, appears to be healthy in every respect, only there is pain enough to disturb the patient, and he thinks that it threatens more pain. The cause seems ambiguous, and the question comes, What shall we do ? "Paint the gum with iodine," says one. "Put on a mustard leaf," says another. "Drill into it," says a third. "It is a pulp stone," says a fourth. "When a patient comes in with an aching tooth," said an old dentist to me, when I was younger than now, "I do *something*. The patient feels better satisfied if you will do something for him." And so the tooth gets better or worse soon, and if nature relieves it by removing the cause for the time being, the iodine, or the mustard, or what not, gets the credit of the cure.

To be continued.)

Dental News.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

ANNUAL GENERAL MEETING, Monday, Jan. 12, 1885.

J. S. TURNER, M.R.C.S., L.D.S., Eng., President, in the Chair.

The minutes of the previous meeting having been read and confirmed.

The President declared the ballot open for the election of the office-bearers of the Society for the current year.

Messrs. A. C. Harris and W. H. Woodruff were then chosen in the manner prescribed by the bye-laws to act as scrutineers of the ballot.

The following candidates were then balloted for and elected Non-resident members of the Society, viz., Messrs. John Brooks Bridgman, L.D.S.I., St. Giles' Street, Norwich; John Alexander Fothergill, M.R.C.S. and L.D.S. Eng., D.D.S. Univ. Pennsylvania, Northgate, Darlington; and Alexander Kirby, L.D.S. Eng., 8, Harper Place, Bedford.

The following nominations have been received by the Council:—William Penfold, L.D.S.I., 30, York Street, Portman Square, W.; Herbert Stephen Parkinson, L.D.S. Eng., 36, Sackville Street, W.

The President then called upon the Treasurer for his report

FINANCIAL STATEMENT.

Mr. Parkinson said it would be remembered that the balance sheet he had presented at the last Annual Meeting showed a deficit of about £36. This year the total receipts had amounted to the sum of £603 1s. 10d., and the total expenditure to £462 16s. 3d., leaving a balance in hand of £140 5s. 7d. A considerable portion of this sum (£86) was, however, made up of arrears of subscriptions which had been recovered, and of entrance fees which should have been received in the previous year. The total assets of the Society invested at interest and at the bank amounted to £2,453 10s. 8d. The Society now numbered 318 members, as against 333 last year, exclusive of 43 honorary members, only 7 new members having been elected during the year, as against 25 in 1883, and 21 in 1882. This was a very serious falling off, but in other respects he thought his report might be considered satisfactory.

Mr. Weiss (Librarian) reported that during the past year no less than 42 members of the Society had made use of the books in the Library, and 65 students had also availed themselves of this privilege. More books had been borrowed during 1884 than in any previous year, and he was glad to be able to say they had been returned with creditable punc-

tuality. Arrangements had recently been made to ensure a satisfactory number of exchanges, so that current dental literature might be well represented in the collection. Independent of these exchanges, amounting to 18 numbers a month, 23 volumes had been added to the Library during the year, viz.:—12 vols. of English books, 3 of American, 7 of French, and 1 German.

He hoped members would not forget that on Wednesday evenings, from six to eight, the reading-room was open for their use, and that Mr. Camps, who was acting as Sub-Librarian with great diligence, would be ready to furnish them with any works they might wish to refer to.

Mr. S. J. Hutchinson (Curator) reported that since the last catalogue was published in January, 1882, a hundred and twenty-five specimens had been added to the museum, being an average of five specimens for each meeting of the Society which had been held since that date. These had all been arranged in a supplementary catalogue, which would be issued with the January number of the Transactions, and in the preparation of which he had received most valuable assistance from Mr. Willoughby Weiss, to whom he took that opportunity of expressing his thanks. Great care had been taken that the names of the donors of these specimens should be correctly entered in this catalogue, but if any mistakes should be detected he hoped that notice would at once be sent him. He believed the Society's Museum was now, as an odontological collection, second to none, and he hoped that members, by a continuance of their donations, would long maintain it in that position. He could not conclude without alluding to the valuable contributions recently made by Mr. Bland Sutton, which, however, had not exhausted his generosity, for he promised yet further additions.

Mr. Hutchinson then exhibited a very interesting specimen just presented by Mr. Paxton Harding, showing two supernumerary upper lateral incisors. On one side the two laterals were placed side by side, one being behind the central and the other behind the canine; on the other side one occupied the usual position, and the other was behind it. He believed the specimen to be almost unique.

Mr. Oakley Coles showed a curious wooden instrument

which he said was used by the natives of the Congo as a tooth-brush.

He also showed an adjustable stool, invented by Mr. Henry Greenfield, which he had found very comfortable and useful in his practice.

The President remarked with reference to the instrument that though it might serve the purpose of a tooth-pick or scraper, it bore no resemblance to a brush, and he thought that that was scarcely a correct designation for it.

Mr. Storer Bennett showed a gorilla's skull which had been lent to him for exhibition. It presented evidence of considerable injury to the facial bones received during life. The upper incisors had been lost, and their sockets absorbed; the nares had also been damaged, especially on the right side, and the right zygomatic arch had been fractured. But a still more interesting peculiarity was the presence of a supernumerary tooth on the inside of the ascending ramus of the lower jaw on the right side.

The President remarked that the condition of the nasal bones looked to him more like the result of disease than of injury. The situation of the supernumerary tooth was certainly very remarkable.

Mr. D. Hepburn then read the following communication from Dr. E. A. Bogue, of New York, observing that he considered the instrument therein described a very ingenious one, and well worthy of the attention of members.

The President said he had been informed by Dr. Bogue that the instrument then being handed round had not been made quite according to his instructions, but that he would send a better specimen as soon as he could get one made.

He then called upon Mr. Storer Bennett to read his paper on "The Herbst Method of Gold-filling." (See page 147).

(To be continued.)

THE VICTORIA DENTAL HOSPITAL OF MANCHESTER.

The Governors and Friends of the above Institution will hold their annual meeting at No. 4 Committee Room, Town Hall, Manchester, on Monday the 16th inst at 3 p.m., Lord Edgerton of Tatton will preside.

STUDENTS' SOCIETY OF THE DENTAL HOSPITAL OF LONDON.

ANNUAL GENERAL MEETING, held January 19th, 1885.

C. TRUMAN, Esq., M.A., M.R.C.S., President, in the Chair

The minutes of the previous meeting were read and confirmed.

The ballot was declared open by the President for the election of officers for the ensuing year; and the result having been ascertained an hour later by the tellers, Messrs. King and England, the office-bearers proposed by the Council were found to be duly elected. President, Mr. C. Truman, M.A., M.R.C.S., L.D.S.; Vice-Presidents, Messrs. S. Buckland, L.D.S., and E. Latchmore, L.D.S.; Treasurer, Mr. H. S. Parkinson, L.D.S., Hon. Secs., Messrs. W. J. England, and G. G. Campion: Curator and Librarian, Mr. C. Rilot; Council—second year's students, Messrs. A. Bardet, A. L. Goadby, A. Helyar, L. E. Sexton, and C. R. Smith; first year's students, Messrs. J. F. Colyer, G. O. Whittaker, J. D. Woodhouse, T. H. G. Wrighton.

Messrs. Mansbridge, Baker, and Colyer having signed the obligation book, were formally admitted to membership by the President.

Messrs. G. W. Gilbert and A. Kendrick were proposed for election by Mr. Campion, and seconded by Mr. Bardet.

Messrs. G. H. Gill, H. Williams, H. J. Moore, N. Petit, H. N. Ludbrook, and A. F. Thompson, were balloted for, and duly elected members of the Society.

Casual communications being called for, Mr. Colyer showed models illustrating a remarkable case of abnormal retention of the temporary teeth, in a man aged 32, only seven of the permanent set having been erupted. The Council's report to the Society was then read by Mr. Newland Pedley, reviewing the past year, and referring to the alteration of the laws and the conversazione held in July. It was received by the meeting with general satisfaction, and unanimously adopted.

The Treasurer's report, announcing a balance of £21 14s. 0d., was then read and received with great applause.

The Librarian announced that Mr. G. Cunningham, of Cambridge, had presented to the Society, a copy of his system of Dental Notation, and Mr. Sjöberg photographs of a case shown by him at the previous meeting. Votes of thanks were accorded to these gentlemen for their gifts.

The President then called on Mr. F. Newland Pedley for his paper on "Facial Paralysis," which was listened to with much attention, and produced a discussion in which the following members took part: The President, Messrs. Stainer, Baldwin, Whittaker, King, Campion, Hooper, and Lloyd Williams.

Mr. Pedley having replied a unanimous vote of thanks was accorded him for his paper.

Mr. Butcher then proposed a vote of thanks to the retiring officers, alluding particularly to the long and valuable services of Mr. Pedley, and the loss the Society was sustaining in his resignation. This was seconded by Mr. Baldwin, and carried unanimously.

The President proposed and Mr. England seconded, "That the best thanks of the Society are due to the editors of the BRITISH JOURNAL OF DENTAL SCIENCE, the JOURNAL OF THE BRITISH DENTAL ASSOCIATION, and the DENTAL RECORD, for their kindness in presenting copies of each issue to the Society.

Mr. Latchmore then proposed a vote of thanks to the President, both for his past services and his acceptance of the office for the ensuing year. This was carried with acclamation, and the President having replied, the meeting was adjourned.

EDINBURGH DENTAL HOSPITAL—PROPOSED NEW BUILDINGS.

The annual meeting of this institution was held in the Hospital buildings, Chambers Street, Bailie Anderson presiding. Mr. James Robertson, hon. secretary, submitted the report, in which it was stated that :

The popularity and usefulness of the Institution were increasing year by year. Last year the number of patients

treated was 6279, of whom 3163 were males and 3116 females. This was an increase of 681 on the number in the previous year. In consequence of this increase the dental staff had had forced on them the necessity of acquiring larger accommodation, the present premises being too small and inconvenient for the thorough and efficient discharge of the increasing demands upon the resources of the Institution. The staff, therefore, suggested the advisability of appointing an administrative committee to make the necessary inquiries with a view to having the Hospital located in a new building. An increase in the voluntary subscriptions made by poor patients continued to show their appreciation of the benefits conferred upon them by the Institution. The usefulness of the Hospital in educating the dentists of the future was also becoming more and more apparent ; while the facilities given to medical students were largely taken advantage of, especially by those who were looking to the navy or army as their future sphere of practice.

The Chairman, in moving the adoption of the report, remarked that though the Dental Hospital might be said to be in its infancy, it would have been scarcely possible to present a more satisfactory statement of the year's work. (Applause.) The fact that there had been more patients was, he thought, an indication not only of the great good the Hospital was doing in the community, but of the benefits which it was prepared to confer on a much larger number of their poor and suffering fellow citizens. It had prospered so well that new buildings were now required. The dentists' profession, like all others, was growing in importance, and the necessity of a thorough and scientific training and education could not be gainsaid. He thought it a hopeful sign that science now directed its attention not so much to the curing of evils as to the prevention of them—not so much to the extracting of their teeth as to the preserving of those they possessed. (Applause.) Dr. Littlejohn, who seconded the motion, testified to the benefits conferred upon the poor by the institution, and said he would bring before the Committee of the Colleges in Edinburgh the fact that medical students had here the means of getting that scientific knowledge in dental matters which they required. The report

was adopted. Mr. W. Bowman Macleod, treasurer, stated that the income during the year amounted to £346 12s. 4½, and the expenditure to £347 19s. 1½, leaving a balance of £1 6s. 9d. due to the treasurer. The funds at the credit of the Hospital amounted, however, to £249, an improvement to the extent of about £30 on those of the previous year. (Applause.) On the motion of Dr. Robert Reid, seconded by Councillor Clapperton, the following office-bearers were elected—President, the Earl of Rosebery: vice-presidents, Principal, Sir William Muir, and Professor MacLagan; and and secretary, Mr. Lindsay Mackersy, W.S. A vote of thanks to the chairman closed the proceedings.

DENTAL STUDENTS' ASSOCIATION.

The Annual meeting of the Dental Students' Association was held on the evening of Wednesday, 21st January. The following were elected as office bearers for Session 1885. Honorary Presidents, Messrs. J. R. Brownlie, L.D.S., and W. S. Woodburn, L.D.S.; President, Mr. Jas. Cumming, L.D.S.; Vice-President, Mr. W. H. Gray, L.D.S.; Treasurer, Mr. Wm. Carruthers, 68, Bath Street; Secretary, Mr. Jas. Cameron, L.D.S., 111, Main Street, Gorbals; Custodier, Mr. Jas. McCash, L.D.S. Council: Mr. D. R. Cameron, L.D.S.; Mr. W. H. Toulds, L.D.S.; Mr. W. Lang, L.D.S.; Mr. H. Gurcke; Mr. Jarvie; Mr. H. McKay; Mr. R. Riddle.

ROYAL COLLEGE OF SURGEONS, EDINBURGH.

During the recent (January) sittings of the examiners the following gentlemen passed their first professional examination for the Licence in Dental Surgery: Frank Hampton Goffe, Birmingham, and John Gardiner Fraser, Caithness; and Mr. Goffe also passed his final examination, and was admitted L.D.S., Edinburgh.

A CASE FOR ENQUIRY.

(From the "Bacup and Rossendale News.")

MADEN V. LUPTON.—William Henry Maden, dentist, Bury-road, Rawtenstall, sued James Lupton, innkeeper, Chorley, for £3 7s. 6d., for services rendered and teeth supplied. Five

shillings had been paid into court in satisfaction of the claim. ---Mr. Callis appeared for the defendant.---Plaintiff's case was that in September, 1883, he had supplied the defendant with a set of upper false teeth and a suction disc, and had also extracted four teeth while defendant was under the influence of gas, for which he charged £1, which, he contended, was his regular and a reasonable charge. He had repeatedly asked the defendant for the money, but had been unable to get it. In reply to Mr. Callis, plaintiff admitted that he had received the teeth back, but denied that they would not fit. The suction disc was supplied at first with the teeth, and not subsequently to remedy defects in them. Defendant had not paid frequent visits to him to obtain an alteration of the teeth. Five shillings a tooth, with gas, was a reasonable charge for extraction ; and the charge he regularly made. His Honour intimated that he did not think it an unreasonable charge. Mr. Callis (to plaintiff) : Show me a single entry in your book where you have charged 5s. a tooth. Plaintiff said he could not do so, as he always entered a lump sum. Defendant said he ordered a set of upper false teeth from the plaintiff. No arrangement was made about price, but they were to be made to fit properly. When he got them they did not do so, and subsequently the suction disc was put in his mouth to remedy the defect the teeth had of dropping down. The teeth, however, still dropped, and ultimately he returned them to the plaintiff. His Honour (to plaintiff) : Have you got the teeth here with you ? Plaintiff : Yes, I have. Would your Honour like to—His Honour (hastily) : No, I will not (laughter). William Lupton, defendant's brother, said he was formerly in the employ of the plaintiff as a traveller. His Honour : What are the duties of a dentist's traveller ? Did you go about the place asking people to employ your master ; or did you carry advertising papers about with you ? Witness : No, I never carried any advertising papers. I am a jeweller by trade ; and go about selling.---His Honour : A pedlar, in fact, selling cheap jewellery (laughter) ? Witness : I sell both sorts ; and I hold a plate licence. I had an arrangement with the plaintiff and got commission for orders. His Honour : But what did you do in order to get orders ? Witness : Where I saw people

without teeth I told them where they could get a set cheap as I thought, and I was paid for doing so (laughter). His Honour: It is the first time I have heard of dentists employing travellers. Witness: It is done; and there are others in this town who employ travellers who carry teeth about with them. It is not a new game. His Honour: You call it "a game?" Witness: Yes; and it is one. His Honour: It is a strange game to me. I have heard of dentists advertising—and a most disreputable thing for a dentist to do—but I never heard of one before employing a pedlar to advertise him from house to house. Witness further said he was employed about three days a week in carrying about the gas and generally assisting the plaintiff. The plaintiff's usual charge with gas was 2s. 6d. a sitting, and without gas 6d. a tooth. He never knew the plaintiff to charge more. His Honour: Is there anybody else who takes out teeth for 6d. each? Witness: Yes; plenty. His Honour: I never heard before of dentists taking out teeth at the rate of 6d. each. Is it the usual price to charge the working classes in this district? Witness: I never saw plaintiff get more; and I have seen him take out hundreds. Witness, in reply to Mr. Callis, said he had known as many as four teeth extracted at one sitting, and for the lot a charge of 2s. 6d. only was made. Evidence was given to the effect that Bacup dentists also charged 6d. a tooth, and with gas 2s. 6d. for the first tooth, and 6d. a tooth afterwards. His Honour said he thought 2s. 6d. a tooth was not an unreasonable charge, and he should give a verdict for 10s.—including the 5s. paid into court—and court costs. The working classes of Bacup would be well advised to pay a little more than 6d. a tooth and have the work done properly, as there was more bad work in dentistry than in any other trade or profession.

Correspondence.

TOOTH STOPPING IN GENERAL HOSPITALS.

To the Editor of "The British Journal of Dental Science."

SIR,—One can scarcely admire the spirit of "L.M.'s" letter on this subject in your issue for January 15th. It seems to

be strongly tinctured with bitterness against those who hold public appointments, which "L.M." appears to think would be much better in his hands, though an unappreciative public may not endorse the opinion. Speaking from practical experience, and I think most dentists who have had such experience will agree with me, I must still maintain that the introduction of stopping operations into general hospital practice is surrounded with all but prohibitive difficulties. Of course there are cases in which durable fillings may be inserted with the first appliance which comes to hand, but this proves little to the point. There are cases in which the most bungling 'prentice-hand, operating in a third-class railway carriage in motion and with little better instruments than a couple of twopenny nails could scarce fail to effect a passable filling; but there are also cases in which, with every modern appliance in the way of chairs, headrests, reflectors, instruments and other conveniences, the most skilful operator is put to his wits' end to fill with success; and by some strange fatality it would seem that it is mainly this latter class of cases one meets with in hospital practice. As I have said, it is seldom till the mischief is considerably advanced and complicated that patients seek the assistance of a general hospital for their dental troubles, and such cases are not to be treated with the first appliances that come to hand. The dentist, therefore, who would introduce stopping into his general hospital practice must—unless he is prepared to carry the complete turniture of an operating room about with him in his visits—require the hospital to provide conveniences for such cases as these in all their infinite variety; and a hospital established primarily for the treatment of general disease would naturally hesitate to incur such expense for a speciality, but would request its dentist to refer such cases to institutions specially appointed for their treatment.

With regard to the "time" argument "L.M." has entirely missed the point. My argument was "that it would scarcely fall in with the arrangements of a hospital, primarily existing for the treatment of general disease, to have so much of its time monopolised by its dental attendants."

In his general remarks concerning dentists holding these appointments, I think "L.M." totally fails to comprehend

the spirit which actuates them. There may be those among them who seek the position solely for the sake of the honour and the luncheons and who leave all the work to a "boy out of the work-room," but I have sufficient respect for my profession to hope that these are exceedingly exceptional. I would fain believe that most respectable practitioners accepting these appointments do so because they consider their profession much more as an art for the alleviation of human suffering than primarily as a mere money-making trade, and regard the poor, who can make them no pecuniary return, as having at least as great a claim on their best services as have their richer private patients, and moreover, I would fain believe that such men have sufficient interest in their profession itself to value too highly the experience which general hospital practice gives, as to the intimate connection between their special department of surgery and the general physiology and pathology of the human frame, to throw such experience away. This, I believe, at least under the new departure which dentistry as a profession has recently taken, to be the spirit actuating at any rate the respectable section of its members, and to this spirit all such members will surely wish God speed.—I am, your obedient servant,

ALEX. HUME.

Manchester, January, 19, 1885.

To the Editor of "The British Journal of Dental Science."

SIR,—To those who are in the habit of using Iodoform for Dental Dressings, and find its characteristic smell somewhat objectionable, it may be of interest to know that by mixing with a very small quantity of either

Ol. Cassia,
Ol. Anise,
Kreosote,

its odour is completely covered, and, as far as I can judge, the antiseptic properties of this drug are not interfered with.

Faithfully yours,

R. DENISON PEDLEY, L.D.S., M.R.C.S. Eng.

Railway Approach,

London Bridge, S. E.,

Feb. 6th, 1885.

OBITUARY.

Margetson.---January 29, at his private residence, Cliffe Terrace, Horbury, in his 57th year, William Margetson, L.D.S., Eng., of Roscoe House, Dewsbury.

MONTHLY REPORT OF CASES TREATED AT THE DENTAL HOSPITAL OF LONDON.

FROM JANUARY 1st TO JANUARY 31st.

Extractions	{ Children under 14.	374
" "	{ Adults.	823
" "	{ Under Nitrous Oxide	413
Gold Fillings	. . . . .	204
White Foil ditto	. . . . .	8
Plastic ditto	. . . . .	591
Irregularities of the Teeth	. . . . .	187
Miscellaneous Cases	. . . . .	237
Advice . . . . .	. . . . .	140
		<hr/> 2977

ARTHUR KING, House Surgeon.

DENTAL HOSPITAL REPORTS. NATIONAL DENTAL HOSPITAL.

MONTHLY STATEMENT OF OPERATIONS FROM JAN. 1st. TO JAN. 31st.

Number of patients attended	1433
Extractions { Children under 14	416
" " { Adults	545
" " { Under Nitrous Oxide	360
Gold stoppings	60
Sheets of Gold used independent of Pellets	
Other Stoppings	613
Advice and Scaling	277
Irregularities of the Teeth	174
Miscellaneous	102
	<hr/>
TOTAL	2547

ISIDORE FREDERICK PRAGER, House Surgeon.

DENTAL HOSPITAL REPORTS. NATIONAL DENTAL HOSPITAL

YEARLY STATEMENT OF OPERATIONS PERFORMED FROM
JANUARY 1st TO DECEMBER 31st, 1884.

Number of Patients attended	19281
Extractions { Children under 14	5372
" " { Adults	11463
" " { Under Nitrous Oxide	4353
Gold Stoppings	847
Sheets of Gold used independent of Pellets	
Other Stoppings	5014
Advice and Scaling	2942
Irregularities of the Teeth	1368
Miscellaneous Cases	1893
	<hr/>
TOTAL	33252

ISIDORE FREDERICK PRAGER, House Surgeon.

British Journal of Dental Science.

No. 412. LONDON, MARCH 1, 1885. VOL. XXVIII.

MESMERIC ANÆSTHESIA.*

By MR. HAROLD MURRAY.

MR. PRESIDENT AND GENTLEMEN.—The subject which I am about to bring under your notice, is one which is classed with other sunder the now popular term, psychical phenomena.

My excuse for bringing it before you is that anæsthesia induced by mesmerism has been, and I believe is at present, made use of during surgical operations, both in English speaking countries and on the Continent, whilst it is reported to be made almost exclusive use of by the native medical men in India.

Many, I might say most of the gentlemen present, are I feel sure imbued with an orthodox disbelief in mesmeric phenomena of all kinds, but from them especially I would beg a patient hearing, since the weight and authority of the names of men I will mention later, who have recorded cases of complete anæsthesia mesmerically produced, and witnessed actually by themselves, must, I am convinced, carry conviction to the minds of such sceptics.

In 1772 Mesmer announced publicly his discovery of a fluid which he said was universal, that is, permeated the whole animate and inanimate nature of our world. This fluid he asserted was capable of regulation by means of strong magnets, and he claimed that by his double discovery he had obtained a sure means of turning or guiding this fluid into healthy channels, so as to ensure the perfect cure of all human ailments.

At this time he was in Vienna, and in connection with an astronomer named Hell or Hehl, in whose possession were those powerful magnets which Mesmer had hitherto used. Hehl seems, either from avarice or from jealousy, to have suddenly awakened to the fact that Mesmer was making a name

* A paper read before the Students' Society of the Dental Hospital of London, on the 9th of February, 1885.

for himself ; for a quarrel arose between them, and Hehl laid claim to all the glory of the discovery, and through his more authoritative position appears to have almost driven Mesmer out of the field, being aided by the opposition shown to Mesmer and his ideas by another eminent gentleman of the name of Ingenhouz. Poor Mesmer in the meantime of course lost the use of those precious magnets. He managed nevertheless, to make a great effect throughout Austria and Switzerland, and proceeded to state that he "could concentrate the power in, and liberate it from, any substance he pleased, and could charge jars with it and discharge them at pleasure."

He appealed to the Academy of Sciences, at Berlin, but was treated with scorn and ridicule. Thus goaded, he undertook to cure one of the great Viennese singers of that time of complete blindness, for which this lady, a Mdle. Paradis had undergone 10 years' treatment at the hands of the court physician, but he was so unfortunate as to be no greater than even a court physician, for he failed also to restore the lady's sight.

In fact the atmosphere of Vienna became so warm for him that in 1779, his discovery being seven years old, he was obliged to take it and himself elsewhere. He went to Paris. Here he seems to have come upon fruitful ground, for Parisian society was at that time in a most morbid and excitable state. There was a feverish race for new topics, novel theories, fresh excitements, and so far as I can judge, Parisians seem little altered in this respect up to the present time. Be that as it may, he at once gained a large number of supporters, and his gratitude impelled him to discover the "Baquet." This was a therapeutic contrivance which has since fallen into disuse and oblivion, and consisted of a tub. Into this tub each of his patients dipped one end of a rod, holding in their hands the other end. The tub was supposed to be full of the magnetic fluid, and the fluid was expected to flow up the rods into the patients. Subsequently, however, this was found not to occur, though many declared themselves cured of all sorts of diseases by this means. From what I can gather from the annals of the time, hysteria seems to have

been more prevalent than it is at present. For a condition which occurred in most of the patients treated in this way, and which Mesmer termed "crisis," was recognised by the medical men of the time as an hysterical fit. This fact, and the challenges given by Mesmer to the scientific societies, together with the moral disorders of which he was the root, caused the French Government to appoint a Commission, among other members of which were Lavoisier, Bailly and Benjamin Franklin. This body, after having made use of electric, magnetic and chemical tests, came to the conclusion that no agency proceeded from the Baquet. They also found that the most susceptible patients, after having been blindfolded, exhibited all the usual effects of magnetic influence, under the deluded belief that their rods were in the Baquet, when such was not the case. They also found by means of similar deceptions, that blindfolded patients on being led into a garden where certain trees were alleged to be magnetised, were thrown into a convulsive fit when they were falsely led to believe themselves near such a tree, while they went unharmed, if, ignorantly, under those trees actually specified as magnetized.

Before the appointment of the Commission an offer was made to him of a pension of £10,000 a year, or £100,000 down by the Government, for the possession of his secret. This he refused, and it is said, his assistant turned informer and realized that sum. I do not know whether that is true. Mesmer had to leave Paris in consequence of the report of the Commission. He paid a short visit to England, and then retired.

I would point out for special notice that his system or theory was based on the idea of a universal fluid, which the operator was supposed to control, and which emanated from himself or from inanimate objects which he had magnetized. The most susceptible of his patients, he reserved for personal manipulation, apparently by means of passes.

He was born in 1733, in a village near the Bodensee, took the degree of Doctor of Medicine in Vienna in 1766, and died in complete obscurity in Mersburg in 1815.

For fifteen years after Mesmer died nothing more, at any

rate in England, seems to have been heard of mesmerism, but then in 1829 a fully authenticated report appeared of a surgical operation for cancer of the breast performed during mesmeric anæsthesia. The patient, a lady, was mesmerised by M. Chapelain, and M. Cloquet, a medical man and lecturer on anatomy, entirely extirpated the breast. The operation lasted 12 minutes. There were no facial contortions, nor any disturbance of respiration, or other indication of pain, and the patient on being awakened some time after, knew nothing of the operation.

After this there was again a period of quietude with regard to the subject, lasting for 10 years, after which, a period of great activity set in, and mesmerism at last became acknowledged more largely than heretofore. This was especially the case in the United States of America.

This revival, as it might be called, was ushered in by Robert H. Collyer, M.D., who, I might mention, took up the subject not from a mesmeric, but an anæsthetic point of view, as he devoted himself to a search for narcotics and anæsthetic agents. He claims to have been the first to use sulphurous æther to procure anæsthesia by inhalation. A letter is in existence proving that he became insensible himself from inhaling its vapour, during a lecture on nitrous oxide at University College as early as 1835, while it was not till 1846 that T. G. Morton and Dr. Charles T. Jackson claimed the discovery or rather the use of inhalations of the vapour of sulphuric æther.

It was this Dr. Collyer who introduced the sudden increase of mesmeric anæsthesia. He had been a sceptic and scoffer until in 1839 he permitted a Dr. Cleveland to try to mesmerize him, the result of which experiment was the conversion of Collyer. A fortnight later he tried himself to mesmerize a young lady, and to his own astonishment he found he could do so perfectly; a fact which he demonstrated by pushing a needle under one of her finger nails, without the least consciousness on her part.

Later on at Bangor, Maine, U.S.A., he produced the anæsthetic state on an infant of 22 months old, during which a Dr. Rich, assisted by Drs. Dean and Fogg, removed one of

its eyes, in consequence of a fungoid growth. The operation lasted 35 minutes, and there was no indication of pain. At about the same time there were two amputations performed in England, one in Leicestershire and one in Nottinghamshire, under the same conditions of insensibility. I have not been able to procure the details of one of these cases. In the *Boston Daily Ledger*, May 28th, 1842, an account appears of a demonstration by Collyer, in the presence of several medical men. A lady was put into the condition of mesmeric anæsthesia, and the extraction of a tooth, which broke down at the first attempt was successfully accomplished by Dr. Kimbal. One of those present was the T. G. Morton who four years later, tried, together with Charles T. Jackson, to wrest the honour of priority in the sulphuric ether matter from Collyer. Collyer also mentions two other cases in America at or about the same time: one, the extirpation of cancer of the foot; the other, the reduction of compound fracture of the arm, part of the bone being removed. In none of these cases was there any pain at the time, nor memory of the operation afterwards.

(*To be continued.*)

ON HERBST'S METHOD OF GOLD-FILLING BY ROTATING BURNISHERS.

By STORER BENNETT, F.R.C.S., and L.D.S., Eng.; L.R.C.P.
Lond.

(*Concluded from page 150.*)

Care must be taken that the instruments be not kept too long in contact with the gold, or the filling will soon become very hot and painful to the patient.

Occasionally, if the pressure be retained too long, the gold acquires a highly polished surface, which cannot be made cohesive in the ordinary way; this may be overcome by rapidly rotating on it a fine cut burr such as is used for dressing down fillings; this tears up the polished surface, and leaves a perfectly cohesive one in its place; the filling may then be proceeded with in the ordinary manner.

It is in all cases desirable that the matrix should extend well beyond the margins of the cavity, both towards the cervical edge and the grinding surface. Unless it extends

beyond the cervical edge it is apt to catch in this part of the tooth, and a ledge of uncovered dentine will here be left when the filling is finished. If it does not extend beyond the grinding surface it will be found a very slow and difficult process to apply the last layers of gold, but not so if the matrix is made sufficiently deep. This is a matter of the greatest importance, and Dr. Bödecker, in an admirable article in the "Independent Practitioner," which was reproduced in the November number of the Journal of the British Dental Association, and which I cordially commend to your notice, says: "The adjustment of the last layers of gold requires almost as much time as when made by the mallet." In my earlier experiments I was inclined to agree with Dr. Bodecker in this view, but subsequently I increased the depth of my matrices; from that time the difficulty disappeared, and I now find it almost as easy to put on and finish the last pieces of gold as the first ones.

When a corner of a tooth, as for instance an upper incisor, is to be restored, a somewhat different method must be adopted for applying a matrix. Here, however, the same general principles for filling will be observed, viz., the cavity must be smaller at its entrance than its interior, and four walls must be provided, since they do not exist already.

These artificial and temporary walls may be formed by imbedding the tooth and two or three adjoining it in softened shellac, brought well over the cutting edges of the teeth and between them, so as to afford as much support as possible. Should any shellac have oozed into the cavity it may be removed when cold by the aid of an excavator. When it is possible, however, it is eminently desirable that the walls should be formed of metal, such as clock spring or platinum foil, which can be moulded to the shape of the tooth in the form of a collar, and soldered or not, as may best suit the case, being subsequently imbedded in the shellac. The metal gives an increased support, and prevents the heat which is apt to be generated in working softening the shellac and causing the gold to sink into it and become spongy and porous. Should this happen, it will be found that a portion

of the gold comes away from the filling and attached to the shellac when the matrix is removed.

When two interstitial cavities in front teeth are to be filled, they are separated sufficiently to allow a thin dividing file to pass between them, on more room being necessary, they are excavated and as good a hold obtained in each as required, then a few cylinders are packed in one cavity and condensed, &c., as previously described, the process being repeated in the other tooth, more gold is added, until finally the two cavities are united, one filling stretching across and occupying both teeth.

When the cavities are quite full, the point of instrument No. 15, which is a clean, smooth sewing needle set in a socket, is placed on the gold in the interval between the two teeth, and by slow rotation and steady pressure passed right through the gold, first near the gum, then near the cutting edge, then between the two; more holes are now drilled if necessary, and finally they are joined by means of a saw or fine file. The two fillings are now finished in the usual manner.

In using the needle, care must be taken that it is passed backwards exactly in the right direction, or it is apt to be driven into one of the cavities instead of between them. These needles are readily renewed when broken, as they are merely fastened into the socket of the holder by shellac or soft solder.

It will be noticed by this method of filling that soft, un-annealed, non-cohesive cylinders are introduced into the cavity, and by subsequent working are converted into a mass of cohesive gold. This effects an immense saving of time, as we are thereby enabled to use large cylinders and several at once; for being soft they are readily adapted to the walls and floor of the cavity, whereas by our ordinary method we can only use small pieces of gold, and one piece at a time; if we attempt to pack a large cylinder which has been annealed we find it becomes hard on the exterior and spongy within. The difference being that one is heated before any attempt is made to adapt it to the walls of the cavity, and the other becomes cohesive only subsequently to the adaptation having been produced.

This adaptation of the gold to the walls of a cavity is very perfect, as will be noticed when a tooth is split open, for every little hollow and depression will be found perfectly reproduced; the centrifugal force of the rotating burnisher having driven the gold before it into every hollow and crevice presented to it.

On splitting open a tooth and removing the filling, the gold will be found quite solid and incapable of breaking up by pressure between the fingers, and may be beaten on an anvil into a thin sheet without splitting, showing that the component cylinders are not mechanically pressed together, but actually welded into a homogeneous mass.

I have used this means of filling in the case of several patients who have previously had teeth stopped by the aid of the mallet, and they all express a preference for the new method, as it saves the jarring which is so painful where teeth have been separated.

Dr. Herbst invariably employs cylinders prepared by a German manufacturer, Carl Wolrab, of Bremen, which seem admirably adapted to this kind of work, and I believe much of our success will depend on their employment; no other gold I have met with appears to possess such a softness and adaptability as this, though the soft cylinders sold by some of our makers also work extremely well.

Should a filling become damp before it is completed, it may be dried as far as possible by the ordinary means, and if a burnisher to which some gold is allowed still to cling is rapidly rotated over its surface for a short time, sufficient heat is generated to perfectly dry it and enable one to proceed with the filling to its completion.

There is an undoubted waste of time in changing the points so frequently, and I think it very desirable that some means be introduced to overcome this difficulty, such as the employment of two engines or two arms working on one engine, or better still, an electric motor for working the No. 5 point, which requires rapid rotation with but little pressure. It would also save the fatigue which is experienced from a prolonged use of the burring engine.

Tin-foil may be worked in a similar manner to gold; from

its natural softness it easily adapts itself to the walls of the cavity, and readily coheres when a burnisher is rotated against it; when beaten on an anvil like gold, it may be flattened without splitting, showing how intimate is the union between its component portions.

From the ease with which it packs, it is more rapidly worked than gold.

Gold is readily built on to tin; a filling may thus be partly built up with tin and completed with gold in such parts as are subject to the greatest amount of wear.

I have been unable to obtain any cohesion with platinum leaf when worked in a similar manner.

Burnishers made of agate answer admirably for compressing the gold, and possess the advantage of not becoming coated with the metal; they are, however, difficult to obtain and readily break, so that I have been reluctantly compelled almost to abandon their use.

To summarize my remarks, I would say that by this method we possess a very rapid, and I hope reliable, method of filling those long and somewhat difficult cavities in teeth where, one or more of the walls being absent, we are compelled to resort to cohesive filling for restoration of the missing portion.

The method is easy when one is accustomed to it, the most troublesome part being the accurate adaptation of a satisfactory matrix, though this and other difficulties rapidly disappear after a little practice.

Too much attention cannot be paid to the matrix extending well beyond the margins of the cavity.

Great care is necessary that the gold be well compressed towards the cervical edge where it and the matrix join, for this is the most critical part of the whole filling.

Should the gold rock, it is due to too few cylinders being in the cavity, or too small a burnisher being used to start with; probably the former is the fault.

Though the cylinders are soft and non-cohesive, they must not be annealed.

When possible, a layer of metal should always intervene between the gold and shellac matrix.

Should the gold remain polished and refuse to become cohesive, a fine cut burr rapidly rotated over it will immediately convert the surface into a cohesive one.

To those who may be interested to the subject I strongly commend the perusal of the articles by Dr. Herbst and by Dr. Bödecker.

In conclusion, I beg in support of my remarks to submit for your inspection a few specimens of the fillings which have formed the subject of my experiments, merely observing that any imperfections noticed in them are due rather to my want of familiarity with the method than to any inherent fault in the system.

The following specimens were exhibited during and after the reading of the paper :—

1. Dr. Herbst's set of 15 rotation burnishers for the engine.
2. Wolrab's and Jamieson's soft gold cylinders.
3. Molar with large cavity occupying masticating and distal surfaces filled by rotation with Jamieson's gold. The tooth and filling were sawn through vertically. The matrix not having been carried low enough had caught at the cervical edge, leaving a ledge of uncovered dentine at this spot.
4. Shellac matrix used in filling the right upper central and lateral teeth of a patient exhibited after the meeting. The shellac became softened at one point during use, and yielding, allowed the gold to sink into it, and become spongy, a portion of it (*shown*) coming away attached to the shellac. This accident suggested the use of a thin layer of metallic matrix between the shellac and gold.
5. A large cavity in a molar had been prepared with numerous pits and grooves, and filled with gold by rotation; the tooth was split up and the filling exhibited, in order that the close adaptation of the gold to the inequalities might be noticed.
6. Two specimens of Wolrab's gold which had filled a tooth; the fillings were removed and beaten out on an anvil to show their malleability, and how intimately welded the mass had become.

7. A similar specimen of Jamieson's gold removed and beaten out.
8. Large cavity in masticating and distal surface of molar filled with Wolrab's gold ; the introduction of the gold occupied 40 minutes.
9. Outer fourth of upper central incisor built up with Wolrab's gold, restoring the labial, palatine, and distal surfaces, and the cutting edge.
10. Cavity in masticating and distal surfaces of bicuspid filled with Jamieson's gold. Tooth and filling cut through vertically.
11. Large cavity on masticating and distal surface of molar filled with tin cylinders and sawn through vertically ; the cervical wall of filling was left untouched after the removal of the matrix, in order that the character of surface left by it might be seen. Time of introducing the tin, 21 minutes.
12. Large tin filling, restoring masticating and distal surface of molar ; tooth and filling sawn through vertically.
13. Half of No. 12 removed and beaten out.
14. Tin filling in lower molar masticating and distal surface. Tooth and filling sawn through vertically. Time in introducing the tin, 25 minutes.
15. Combination filling of *tin and gold*. Large cavity in masticating and distal surface of upper molar, three parts filled with tin occupying 10 minutes, and finished with Wolrab's gold occupying 12 minutes. Together 22 minutes.
16. Shellac and platinum matrix adapted to three upper front teeth, for restoration of distal corner of left upper central. Arranged so that the filling can be made from the *front*.
17. Similar matrix adapted to distal corner of right upper canine, so the filling can be performed at the *back*.
18. Clock spring matrix wedged between second upper bicuspid and first molar, for restoration of the distal and masticating surface of the bicuspid.
19. Clock spring collar surrounding molar adapted to a case

where there is no contiguous tooth against which a matrix can be wedged.

20. *Patient exhibited.*—W. R., æt. 22. Frail teeth. Proximal sides of right upper central and lateral incisors restored. The enamel was very thin and chalky. The palatine, proximal, and labial walls were built up. Shellac matrix used which became soft, allowing the gold to become spongy at one part, and needing extra gold to be added at the last. This matrix is described as No. 4 in this list. Time for the two fillings, 45 minutes.
21. Mesial surface of right upper central. The teeth were very close together, and were just wedged sufficiently at the time of operation to admit a thin dividing file. Time, 8 minutes.
22. Two shallow cavities in proximal surfaces of left upper central and lateral. No wedging. Time, 16 minutes the two.
23. Anterior surface of first left upper bicuspid, the cavity also involving the masticating surface. Clock spring matrix used. Time, 18 minutes.
24. Proximal surfaces of first and second left upper bicuspids. Clock spring matrix. The first bicuspid occupied 8 minutes, and the second 10 minutes.

Wolrab's gold was used for all the fillings in this patient.

NOTE.—Wherever the time is mentioned it applies only to that of introducing the filling, as that is the special part to be noted; the preparation of a cavity and finishing a filling being carried out in the ordinary manner are therefore not noted.

A CONDENSED HISTORY OF HISTOLOGICAL OBSERVATIONS.

By FRANK ABBOTT, M.D., New York.

(*Concluded from page 158*)

There may be other older germinal matter outside of the nucleus, on its way to conversion into formed material, but still possessed of life, and which assumes a tint with carmine, but not as deep as the nucleus or centre. Formed material,

he says, instead of being active is passive, non-acting, dead, and can increase only at the expense and death of the germinal matter, on the periphery of which it is formed.

Beale, however, took the most active tissues of the animal body, to wit, the muscles and nerves, for formed material. This position was vigorously assailed by Bastian, who showed the weakness of Beale's theory upon the ground mentioned. The nucleus itself was shown by Brucke to be often missing, and by no means a constant part or portion of the cell. He also conceived the possibility of the granules being secondary products of the protoplasm, so much so that in his views the cell was a lump of protoplasm destitute of a distinct structure, and often lacking a nucleus. In this view he was followed by all German histologists, including S. Stricker, the editor of the *Manual of Histology*, the publication of which began in 1868, and was finished in 1871. Quite a discussion arose at that time among the savants as to the propriety of the term cell, and as to the necessary properties of a lump of protoplasm which would entitle it to the name of a cell.

New views as to the structure of protoplasm and tissues were announced by C. Heitzmann in 1873. This observer discovered a reticular structure in a number of protoplasmic lumps, both in isolated individuals, such as *amœba*, colourless blood corpuscles, etc., and constituent parts of tissues, such as cartilage, corpuscles, epithelia, etc. The reticular structure of so-called protoplasm seems to have been first noticed by Alexander Nasmyth in 1839, who gives illustrations of this reticulum, but no comment upon it. The reticulum in the nucleus was first seen by Frommann in 1866, and others after him, especially in corpuscles of the connective tissues of the nerve centres and in so-called ganglion cells of the spinal cord. Heitzmann claimed that the filaments visible in the nucleus, its inclosing shell, and the filaments in the mass of protoplasm, are formations of living matter proper, whereas the meshes of the reticulum, and the interstices between the filaments are filled with a fluid non-living substance. He based his assertions upon the direct observation of the fact that during the motion of the protoplasmic lump

the reticulum is in constant motion, and keeps changing its shape so long as the whole lump exhibits signs of life. Later observers, Strasburger, Butschli, Auerbach, Hertwig, Fleming, Klein, and a score of others, have demonstrated the presence of a filamentous structure in the nucleus, which is distinctly reticular only in the condition of rest. Most of these observers resorted to alcohol treatment, and staining methods which cleared up the bulky filaments of the nucleus only; hence a direct connection of the nuclear filaments with those of the protoplasm proper was rendered invisible and even denied. That much, however, was made clear by these researches, that in the nucleus there is a substance capable of form-changes, of growth and of division; properties, therefore, which we are accustomed to consider as attributes of life, or properly speaking, of living matter.

Beautiful, odd configurations of the filaments in the nuclei were described, especially in the process of its division; they present a star, or sun-rays-like appearance, and were given by Fleming the not very musical sounding name of "Karyokinesis." Heitzmann's assertion that the protoplasm likewise, at a certain stage of development, has a distinct reticular structure, is at present acknowledged as correct by many eminent histologists abroad, though the significance of this reticulum, and its participation in the process of motion and locomotion is still a much vexed question. According to these latest views the tissues of the body are not composed of single cells, and an intervening, intercellular substance, but all tissues form a continuous mass of living matter, which is arranged in the shape of a reticulum throughout the whole body. What formerly were thought to be individual and isolated cells, for instance cartilage corpuscles, bone corpuscles, etc., are, according to his views, points of intersection of the reticulum of living matter, the meshes of which contain a liquid in the so-called cells, and a comparatively solid glue-yielding basis-substance in the basis-substance between the cells. Epithelia also were shown to be connected into a continuous mass of living matter by means of the so-called "thorns" or "prickles" traversing the horny cement substance between the epithelia. The same uninterrupted con-

nection of the living matter has been demonstrated in muscle and nerve tissue. All these tissues being supplied with, and accompanied by connective tissue, the carrier of blood and lymph vessels. They contain isolated corpuscles, called blood and lymph corpuscles, suspended in a liquid, the plasma of the blood and lymph.

This doctrine does away with the previous cellular views and "cellular pathology." Whereas in the former cellular doctrine the animal body was composed of a large number of individual cells, resembling a rather complicated mosaic, in the present view or views of Heitzmann, the body *in toto* is an individual, and the tissues nowhere contain isolated individuals except in the blood and lymph vessels. These views of Heitzmann have largely gained ground here in America, during the last nine years, while abroad many microscopists are rather loth in accepting a doctrine directly opposed to the cell theory. Among the most prominent microscopists in Europe who agree with these new views may be mentioned S. Stricker, of Vienna, and A. Spina, of Prague. The former demonstrated the life of the basis-substance in inflamed tissues, the latter in normal tissues of different descriptions by direct observation under the microscope.

L. Ranvier, of Paris, has recently succeeded in demonstrating the filamenous connections of the epithelia by means of new methods, to a degree of clearness which leaves no further doubt.

Thus I have traced out the development of biological doctrines from the ancient to our modern times.

The progress made in histology has been unquestionably connected with the development of our optical means, and so far as these means have reached a higher degree of perfection so the conclusions reached in the study of histology have become more perfect and satisfactory.

I am personally convinced of the correctness of the views announced and held by C. Heitzmann, of New York. The reticular connection I have shown in my publications on topics concerning the physiology and pathology of human teeth. Let us hope that with an advancing improvement of the optical apparatus and thorough education, this new doctrine

will conquer ; for with the cell theory neither the structure nor the pathology of the tissues could be explained to a full satisfaction.

DISCUSSION UPON MR. STORER BENNETT'S PAPER ON HERBST'S METHOD.

Concluded from page 153.

The President said he feared the most important points in the paper were being lost sight of; the precise form of the matrix was not an essential part of Dr. Herbst's method. He hoped that, as the time which could be allotted to the discussion was short, members would confine themselves as much as possible to the subject of the paper, viz., the advantages or disadvantages of filling teeth with soft gold with the aid of rotating points.

Mr. F. J. Bennett said he quite agreed with what the President had just said; the exact form and material of the matrix was quite a secondary matter. He thought a good deal of what had been said was not very much to the point. Dr. Cunningham had talked about the gold being made to adhere but not to cohere. He (Mr. Bennett) had always understood that the only distinction between adhesion and cohesion was that the latter meant the union of similar bodies, and the former the union of dissimilar; therefore when gold was joined to gold that was cohesion. Mr. Storer Bennett had, he considered, put the subject before them in a very practical form, and the best thing members could do was to go home and try it for themselves.

Mr. Hern said he happened to be present when Dr. Herbst's brother gave the demonstration at the Dental Hospital referred to by Mr. Bennett, and he could not say that the results were altogether satisfactory. He noticed that the operator used unannealed cylinders for the deeper part of the cavity, but filled the last third with cohesive gold. He had since made a few experiments himself, and he found that there was no doubt about the fact that the gold did become thoroughly cohesive as the result of this process. But whatever might be the advantages of this method, its range of adaptability was limited, since it could only be applied to fairly accessible cavities. At all events there was very great difficulty in applying it to cavities which were out of sight,

and in using right-angle attachments. It was most useful in cases where the walls of the cavity were frail; it was a great advantage in such cases to avoid blows, and better adaptation of the gold to the walls could be obtained in this way with less pressure. The gain of time appeared to him to be less clear; he thought he could fill a crown filling by hand quite as quickly as with the rotating burnishers. Had Mr. Bennett found that it made any difference which way the instrument was rotated—*i.e.*, from the enamel to the gold, or from the gold to the enamel?

Mr. Betts said that he had only a few days before received a letter from Mr. Chas. Tomes in which he referred to various matters of professional interest which he had met with during his visit to the States. With reference to the subject under discussion, he wrote: "About the Herbst method I feel less sure. It easily makes water-tight plugs, and so far is very good, but whether it is better or more rapid than other methods I feel less certain."

The President said it appeared to him that a good deal of the criticism he had heard during the discussion was founded on theory rather than practice. But it was evident that Mr. Bennett had done a large amount of work, and had investigated the matter practically. All new methods presented difficulties, and no doubt the Herbst method was no exception. But Mr. Bennett had shown that these difficulties could be overcome, and he thought that so far as the discussion had gone his verdict would be in favour of the practical success of which the specimens before him were evidence, and against the theoretical objections. He must now ask Mr. Bennett to reply.

Mr. Bennett said his object had been to learn the views of the members with regard to this new method, and in this he had been fairly successful. In reply to Mr. Vasey's question, his opinion was that the gold was rendered cohesive by the heat which was developed during the process of condensing it. The gold certainly did become hot, and if the operator was not careful the tooth might become so hot as to be unbearable and the instrument too hot to be touched. With reference to what had been said about the matrices, he admitted that this was the least developed part of the process;

still they answered their purpose sufficiently well, except the shellac matrix which was certainly not satisfactory; lining it with metal was a decided improvement. In reply to Mr. Coffin's suggestion, that it would be better to line the cavity with soft gold and condense this by hand, after the manner of the best operators, he could only reply that very perfect adaptation of the gold to the walls of the cavity *was* obtained by the Herbst method, as Mr. Coffin might satisfy himself by an examination of some of the specimens exhibited, and that this close adaptation was *not* destroyed by rendering the gold cohesive afterwards. Dr. Bödecker advised that the *last* layers should be made of cohesive gold condensed with the mallet, but Dr. Herbst was in the habit of using soft gold throughout, and all his (Mr. Bennett's) work had been done in this way.

The answer to Mr. West's question was that right-angle attachments could be used. With regard to Mr. Cunningham's remarks, he (Mr. Bennett) had used English gold as well as German, and had found that Jamieson's answered very well, though it was not quite as good for this purpose, as Wolrab's. As to the distinctions between adhesion and cohesion, he could only repeat that the gold did cohere after using the smooth-cut burr, though it would not do so before. The A1 impression composition, suggested by Mr. Cunningham for forming matrices would, he thought, be too soft for use in this process.

He did not intend to imply that beating the filling out on an anvil was a conclusive test, still it was of some value. He might mention, as evidence of durability, that Dr. Herbst's brother had some large gold fillings in his mouth, which had been inserted by this method two years before, and they showed no signs of wear. Dr. Bödecker had tested the specific gravity of fillings inserted by this method and with the mallet, and that of the malleted plugs was the higher. Wolrab's gold worked very well when used in the ordinary way. He thought Mr. Hern would find when he had had more practice at this method of filling, that a decided saving of time was effected by it. He admitted that it might be better to use the ordinary method of filling for inaccessible cavities.

British Journal of Dental Science.

LONDON, MARCH 1, 1885.

MAL-NUTRITION A DENTAL DISEASE.

Among the developments arising from the steady advance of dentistry in the past few decades, has been its extension into the provinces of medicine and surgery. In spite of the care which dentists usually take to avoid trenching upon the domains of the physician or surgeon, there arise occasions when his diagnostic power and therapeutic aid must be brought to bear upon cases apparently not dental. It may happen, and often does so, that the surgeon is unable to account for symptoms and the complications of a patient under his care. He applies his ample experience and skill, possessed as he is naturally with a bias towards pure surgery, he expects the ailment will yield to the methods he employs. Failing success in these lines, the diagnosis of "sympathetic lesion" is often arrived at, and the patient, although duly labelled and pigeon-holed, is still uncured. In the sequel of such a case thought suggests consultation with a specialist, whose mind being always tuned to one note sounds in union when the case in question happens to suit his branch of knowledge. These sympathetic troubles, so called, are often the result of uncared-for teeth, and when this is so the surgeon has to fall back upon the dentist's aid. Perhaps it is more common for such cases to come from the hands of the physician. In more cases than enough the true cause of trouble—a dental deficiency or departure from health—is overlooked, and the patient flooded with tonics, with acids, and with cod-liver oil. A careful study of hospital out-patients leads the intelligent observer to remark that a large number of them suffer from dyspepsia and chronic wasting. The dyspeptics are divisible into those who willingly and wilfully overloaded their digestive canals with indigestible foods, such as chronic alcoholics, butchers who indulge in animal food to excess; and those who fail to assimilate their food, and who are incapable of converting their diet into muscle, blood, and bone. These last again come under the class of persons whose bodies and

minds are *chronically wasting*. In the midst of good food they are literally starving. It would be going a great deal too far to say that this starvation was always due to want of masticating power, but it is within the limits of everyday experience to trace the *origin* of a large proportion of these cases to dental disorders. The uses subserved by mastication are usually little appreciated. Men, women, and children bolt their food and in time forget that teeth were made to bite with. Many commence the habit of bolting their food from absence of the necessary chewing instruments—their teeth. Odontalgia, perhaps not severe enough to cause serious inconvenience, is yet sufficiently troublesome to induce people to avoid “eating on that side,” and hence the food is only partially ground down and reduced to pulp. Food imperfectly masticated is imperfectly saturated by the digestive juices. From this imperfect permeation of the juices, of course follows incomplete digestion, and so the semi-digested food which is not capable of becoming assimilated is lost. These facts have often been insisted upon, and both dental surgeons and medical men are ready to admit the importance of attending to the teeth *when they are diseased* and often past redemption. But we believe that comparatively few medical practitioners accept the maxims, which are dental axioms, and upon which is based conservative dental surgery. It is contended that in very many cases, far too many, the vitality of an individual is undermined by chronic wasting of his tissues, and that this chronic wasting is due indirectly or directly to neglect of the physiological laws involved in the care of the teeth. The lowering of resistive power means that, although apparently in health and strenuously combatting any hint that care is needful, the individual is in reality on the verge of a severe illness. Let some out of the many petty accidents of life occur—wetting of the feet, omission of some article of clothing, even an unusual physical exertion, and then at once the “healthy” man collapses and becomes completely prostrated by an attack of illness which would to a more robust subject mean a bagatelle. To be forewarned is to be forearmed, and it becomes an imperative duty of dental surgeons to lay clearly before the community at large the untoward chain of events

which will sooner or later follow upon dental disease if allowed to run its course. The teeth of to-day are said to be less sound and less resistant than those of a few generations back. What then will happen to those who inherit our vices and our teeth, together with our perverse neglect of the hygiene of our mouths?

THE COCAINE FURORE.—Every drug like “the proverbial dog” will have its day, and so we suppose will cocaine. It is a pity that everything of this sort becomes worked up to such fever heat that the real uses are lost sight of amidst extravagant promises and expectations which fail to be realised. Cocaine is going the round of the societies. Mr. Harry Fenwick brought it before the Medical Society of London during the past month, and it excited some interest at the Odontological some meetings back.

COCAINE is getting an encyclopædic literature. He who has not written about it had better do so or he will be left in an insignificant minority. Accounts differ widely. An American dentist recently tried it and says although it lessened pain during excavation it acted less beneficially than precipitated chalk. Mr. Taylor has used precipitated chalk for ten years, and has found it answer as well as anything for relieving sensitive dentine. He finds cocaine useful, but only as an obtunder, and it seems, he thinks, to succeed in some cases only.

TO PREVENT THE COCAINE FUNGUS.—While upon the subject of Cocaine we may mention that the fungus which grows in Cocaine solutions is said to be exterminated by oil of cloves. One drop of the oil is added to a few drops of alcohol, and then a drop or so of this put into the Cocaine solution.

ILLUMINATION OF THE CAVITIES BY ELECTRICITY.—Dr. Felix Semon, the Physician to the Throat Department at St. Thomas's Hospital, at a recent meeting of the Medical Society of London, revealed two important facts. He showed to

demonstration in the first place that it is not only possible but very easy to illuminate the mouth and pharynx—indeed the, other cavities also—by means of electricity; and, secondly electro-therapy faradism, the galvano-cautery, and electrolysis can be worked by means of pocket accumulators chargeable at home. Although illuminating the mouth by electricity has been used by the dental profession, and has been familiar to many for a long time, yet it was well brought forward by Dr. Semon, and will perhaps induce many dentists to make trial of a means of gaining light which deserves all we can possibly urge for it.

INFLUENCE OF SEX ON DENTAL CARIES.—M. Galippe finds the density of the teeth of women to be less than that of men. Upon this statement it is sought to show that the greater frequency of caries in one sex than the other is due to this difference of density.

A CORRECTION.—The article entitled “Note Upon an Instrument for Separating the Teeth” was, by a printer’s slip, allowed to appear as having been written by Dr. Boyne. It was in reality from the pen of Dr. Bogue.

APPOINTMENT OF AN ANÆSTHETIST TO UNIVERSITY COLLEGE HOSPITAL.—We read in the *British Medical Journal*: “Dr. Dudley Buxton, who for some time has been devoting his attention to the subject of Anæsthetics, has been appointed by the Council of University College, Administrator of Anæsthetics to University College Hospital. The appointment has been made to fill a vacancy created some time back by the death of Mr. J. T. Clover.”

APPOINTMENT OF DENTISTS TO SCHOOLS.—We are glad to see our contemporary the *Journal of the British Dental Association* has in a leader, entitled “An important precedent” drawn attention to Mr. Moxon’s appointment to the North Surrey District Schools, at Anerley. We drew attention to this highly important precedent several issues back, and as our readers will remember, enforced very strongly

our views that all such schools should be under skilled superintendence. We again urge all who have the opportunity to agitate for dental appointments to prisons, workhouses, and schools. Mr. Prangley, the medical officer to the Anerley Schools, cannot be too highly commended for his far-sighted action in recommending the appointment.

THE DENTAL DEPARTMENT AT ST. BARTHOLOMEW'S HOSPITAL.--It would appear from the considerable enlargement of the dental staff at this hospital that dentistry and its higher claims and aspirations was about to find a home in a "general hospital." Thus would be best answered by a correspondence which has been running for some while in our columns, and for our own part we should welcome any attempt at the introduction of more adequate means of applying and teaching conservative dentistry at our general hospitals. There are, of course, many strong arguments against the intermeddling of general hospitals with dentistry. But it is done and so should be done well. One caution is needful. A large number of out-patients are not recruited from the ranks of the "deserving poor." In the dental clinique such deception would easily be effected, and most stringent rules should be framed, whose aim should be to exclude all save the really deserving and actually necessitous class of patients.

SOFT AND ROUGHENED ENAMEL should be scraped and thoroughly polished. A brief editorial in *Items of Interest* says: Often, the labial or buccal surface of the teeth has been so long neglected, it is like loose powder, showing the organic cement quite gone, or covered with a green, soft filament that shows the lime quite eaten out. Such surfaces may not need filling, but they sadly need cleaning and polishing. In spite of the prejudice of many patients, the whole of this loose surface must be removed, and the new, hard surface we have thus brought to view, must be polished till it shines like glass. Sometimes small pits and deep depressions will need filling, but even if there is here and there rather deep grooves and saucer-like depressions, if they are left thoroughly hard and well polished, and afterwards kept clean, there will be no trouble.

Abstracts of British & Foreign Journals.

DEUTSCHE MONATSSCHRIFT FÜR ZAHNHEILKUNDE.

NEW METHOD OF STOPPING TEETH WITH TIN AND GOLD COATING.

By W. HERBST, Bremen.

Herr Herbst made his first experiments in the use of tin as a stopping for teeth in 1883, in Freiburg. It was found with the use of rotation instruments to be perfectly successful. Herr Herbst has since then made several different stoppings of tin in order to see if his method proved equally successful in practice as in theory. He has, he says, only occasionally used the method and then only in such cases where other stoppings, such as amalgam, cement or Hill's stopping have been used in vain, and where the patient's teeth are so bad as to require stopping afresh about every six months. Tin stopping is, in Herr Herbst's opinion, in such cases invaluable and superior to any other material; Hill's stopping would be equally good if this preparation were not so easily worn out by use.

Unfortunately tin is not as clean in appearance as gold stopping, for it very soon looks dark and even if mixed with gold it soon assumes the same discoloured appearance. In order to avoid this difficulty Herr Herbst has tried filling teeth with tin up to the edge of the enamel and then laid a layer of gold on the surface and upon all parts which are visible or at all conspicuous. Herr Herbst strongly recommends this method as being very easily accomplished and very interesting to the operator. Any one accustomed to stopping with gold will find no difficulty in it, as it only needs constant practice.

Tin preparation of S. S. White, extra tough tinfoil No. 8-10 and the new preparation Globe tinfoil No. 8 are the best for the purpose. The tin used should never be exposed too long to the air as a layer of oxide is soon formed, and when that happens it is difficult to work the tin.

Herr Herbst cuts a book of tinfoil into four parts, two of which are again cut into two strips, making in all six strips. A strip is then rolled loosely with the fingers after the manner of rolling a dinner napkin (not folded with a knife) the roll thus formed is then cut into six, eight, or more pieces which must be kept carefully in a glass stoppered bottle until used. In stopping a molar with tin stopping with gold surface, Herr Herbst after laying on the rubberdam and excavating the cavity under operation, fills it under rotation up to the enamel edge with tin. For this purpose the head instrument No. 3 and 4 (alphabetically c. d.) and the instrument No. 5. If the tin is very easily worked more pieces of the preparation are directly placed in the cavity and are condensed by quicker rotation, particularly the last layer which has to hold the gold coating. Tolerably large and deep cavities require three or four layers to fill them and the manipulation takes a few minutes only, about a quarter of the time occupied in stopping with good gold filling under rotation.

When the cavity is filled up to the enamel edge, any tin which has been rubbed over the enamel must be firmly pressed down into the cavity with a hand plugger and all the edges examined with the plugger to try if the tin lies firmly. Now the last layer of stopping is put in, it being of gold slightly heated. This is placed by means of the hand plugger or rotation instrument under hand pressure. Gold and tin combine very well. After the cavity is completely stopped the head instrument No. 1-5 is used in order to condense and polish the last layer as quickly as possible. The stopping will now, before the rubberdam is removed, be smoothed and polished by the usual means.

STOPPING FRONT TEETH WITH TIN AND GOLD.

This kind of stopping, as before remarked, is used by Herr Herbst only in such cases as required constant treatment, viz., about every six months which occurs frequently in cases of caries, by which great devastation is caused in a very short time. Should the stopping not remain firmly in its place, such teeth cause injury to other parts, and under such circumstances tin overlaid with gold is preferable. The preparation

for it is similar to that in gold filling. When Herr Herbst has filled the cavity by quicker rotation with tin (the last layer being particularly well condensed as it will have to receive the gold overlaying) he cuts away the visible part of the tin with an excavator, so that the enamel edge is free and then fills the visible part of the stopping with gold either by means of a hand plugger or a rotation instrument. Lastly the upper surface is glazed or smoothed with the instrument, large surfaces are easier to manipulate than small.

In front teeth where the back part of the tooth is gone, Herr Herbst is of opinion it is best not to use tin owing to its softness.

When the stopping is finished, the tin can, before it is polished, be smoothed by the burnisher, which is very easily done, and all superfluous stopping cut away with a sharp knife. Such a method is highly to be recommended, for patients unable to go to the expense of gold stopping and the work takes much the same time as when amalgam or enamel stopping is used while it has this advantage that the operator need not be in constant practice to make use of it.

The preparations for the approximal stopping of molars with tin overlaid with gold are the same as in gold stopping and the stopping is done in the same way as in central stopping. The tooth being filled up to the edges with tin, the visible part must be covered with gold as described in filling incisors.

If the stopping is well made it looks exactly the same as if it were all gold. Herr Herbst found on attempting to combine gold leaf and tin, that such a union was beyond the gold-beater's art. Experience taught him that though gold and tin-foil afford an excellent means of stopping when manipulated with sharply indented stopping instruments, yet combination as in cohesive gold is impossible. According to Herbst's method, it is possible to prepare this preparation if after one layer has been condensed the next layer is thrust firmly into the first by means of pluggers then again condensed. It is impossible to make the last layer of pure gold, either the gold must be beaten into the tin or the tin into the gold. As pure gold cannot be used, pure tin in this method is preferable.

When the cavity is filled to the enamel edge the last layer is condensed by means of head instrument No. 1-5 under quicker rotation, the surface becomes quickly smooth and glazed. Then the enamel layer made of glowing gold is placed and finally smoothed.

If the gold cylinder is used in stopping, the cut surface should be allowed to come in contact with the tin, the adhesion then becomes firmer or the reverse according to the turning of the cylinder.

When all is completed it will be found that the layer of gold cannot be separated from the tin, and should an attempt be made to remove it by force, the gold will tear away a part of the tin with it.

It is unnecessary to use sharply pointed plugging instruments upon the gold layer, smooth, blunt pluggers answer every purpose if kept polished with sandpaper.

It is curious that though gold will not mix with tin even under the goldbeater's hammer, it will adhere quite easily when manipulated as above described.

COMMUNICATION FROM THE CLINICS OF DR WITZEL OF ESSON,

By Herr OTTO WESTPHAL.

POLISHING AND DRILLING MACHINES.

Although the polishing driller has long been used in dental practice for finishing fillings, &c., yet it has been little used in that for which it was best fitted, viz., the fillings of cavities. Herr Westphal says this method was unfamiliar to him until he saw it used by Dr. Witzel. Until now the enamel knife, polishing or diamond rubbers have generally been used in the preparation of cavities destined for filling and the ordinary steel drill for the shaping of carious cavities. Small enamel knives for the breaking open of concealed cavities on the masticating surface have been exclusively used. There is an immense scope for the use of drills as the working of the enamel on sensitive teeth with steel instruments is painful

and disagreeable. With the file and the diamond as polishing rubber the enamel edges are very well prepared. But concerning edges which arise on the separated surfaces, it is almost impossible to do anything with the instruments just named.

For this, especially for the rounding off of the enamel edges of the lingual surface other instruments are necessary.

Most practitioners use the polishing instrument. For the proper drilling of the cavities it has not been much used.

The need of having other instruments instead of steel drills for this purpose has existed for a long time. The diamond drill was fabricated for the purpose, and as long as it was new it fulfilled its object, but two or three times used the diamond dust beaten into the silver head of the drill was worn out and the diamond drill useless. This instrument was too expensive to come into general use, so it would be well if every dentist would learn the use and the preparation of polishing drills. For their preparation old, blunt drills and broken polishing wheels and files are used. They are also cheap and save considerable expense in steel drills. Before the drill is brought into union with the polisher it is cleansed by heating in a spirit flame and cooling in a small basin filled with nitric acid. In this way the teeth of the drills are somewhat sharpened. After it is freed from all dirt take the drill in one hand holding its head over the flame, and in the other a polishing file which has been heated long enough to attain the consistency of sealing wax. Then let the polish drop in small quantities on to the heated head of the drill. After the mass is somewhat cooled press it together with wet fingers that it may remain firm in the teeth of the drill, then increase according to pleasure the size of the head, and let more polish fall on that which is already firm. Whilst the mass is still soft give the head the shape it should receive with damp fingers. In order to make the polish more firm on the drilling shaft, put a ring of shellac on the under edge of the head. It must be remembered before all things that the drill should be perfectly clean, and that the drill head should be in the middle of the polish. The old fissure drill is used for the preparation of heads which are required for the polishing

of deep cavities, and the rounding off of corners of approximal surfaces. According to Dr. Witzel's opinion separation is effected better with the polishing instrument than with any other. As it is easily worn out by frequent use a store of ball pear and cylindrical shaped forms must be kept in readiness. This instrument can only be used damp. When operating on patients with the polishing drill, a china egg-cup filled with carbolic peppermint, water, should be held in the left hand at the height of the chin, in which the polishing point must often be dipped. This simple precaution permits a rapid preparation of the cavity and makes the use of the various damping apparatus indispensable.

The tooth which is filled must be of such a form that no projecting corners should worry the tongue and that no remains of food may be held, through the filling the tooth must attain a certain roundness without any corners being in the place of separation, so that the remains of food may not be kept but cast away by the convex surface. To form a cavity in this manner is hardly possible without a polishing drill. If three lower molars which are carious on their approximal surface have to be filled, the enamelled corners must be pressed with the enamel knife or removed with light blows with the enamel chisel. Then corners, which are troublesome to tongue and cheek must be removed. This is done with the previously mentioned instrument. Then the corners of both cavities must be so ground that the edges of the cavity may form a blunt corner with that already rounded. This is best done with the little polishing drill, with this the corners can be filed without inconvenience to the patient. One often sees that amalgam fillings in approximal cavities extend over the edges of the teeth. It is very important one should use the smallest polishing drills in preparing incisors for the reception of gold. In this case where it is necessary to grind the enamel edges from within outwards, there is no other instrument to compare with the smallest polishing head. The use of the polishing drill should be practically demonstrated, he who has once seen and used it will find it indispensable.

Literary Notices and Selections.

INFLAMED AND SENSITIVE TEETH.

By John T. Codman, D.M.D., of Boston.

(Concluded from page 184).

Should a similar case come into my office while I am washing my hands in the patient's presence, I will ask this question: "When did this pain first come—at night or in the morning?" The answer will almost decide the cause, if the patient declares it to have come in the morning on awakening; for, if the pain is what is termed neuralgic—that is, sympathetic with some other portion of the nervous system under pressure—it will not come on after a night's rest, when the system has been recuperated, and the nervous force has been replenished by sleep. The next question will be, "Does the tooth feel larger than the others?" If an affirmative answer is given, the diagnosis is for the present closed. The cartilage, which is placed between the tooth and jaw, to receive the shock of closure of the jaws, is swelled by the flow of blood that is there to bring pabulum and to carry away the retrograded tissues; for pain, I argue, always destroys some portion of the tissues. But, in this case, why is this flow of blood to the periostium? Simply because there are almost no perfect articulations of the natural teeth, and the patient, during the night, in dreaming, from mental cares, indigestion, or other causes—any intense mental or physical emotion will produce it—has brought his jaws together with too forcible occlusion on an imperfectly articulated tooth, pounding and inflaming by this means the underlying fleshy tissue. Remember, now, our lesson that the fleshy tissues alone give pain, and that the tooth is now a mechanical irritant, and the cure must be effected in a scientific mechanical way.

When the periostium, pericementum, cartilage, or whatever it may please us to call it, is once inflamed by a strain or a blow, after occlusion of the jaws, be it never so slight, it will increase the inflammation, until the cartilage reaches a point where a static condition sets in, and congestion, dental abscess, and fistula are the natural sequences, unless the cause be removed before it reaches this stage. If any one desires to try the effect of mental and physical exertion on the closure of the jaws, let him try to lift a very heavy weight or get tremendously angry with his mouth open, if he can. The

aws automatically close with great firmness under such circumstances.

As a practical suggestion, when your patient says the aching tooth feels longer than the others, it is so. It is not the effect of imagination. It is a plain matter of fact. It may have had a mal-occlusion for a long while, and the exalted sensibility occasioned by irritation had just revealed it. The only way to cure it is to shorten this bone—this inert matter, looking at it from the mechanical side, and thus rid the periostium of its irritant. Half measures will not do. The articulation must be reduced to nothing ; in other words, so that when the jaws are occluded the patient is not aware of any strike against the inflamed tooth. The relief is immediate. Expressions of gratitude will come from innumerable patients. Not the least of such was one to me from a lady who declared I “ought to be sainted.”

There are occasionally times when the tooth is too lame to have the operation performed. Rest for the tooth—meaning always the periostium—is required, and must be accomplished by other means, that is the tooth must be relieved from all pressure, in order that the engorged tissues shall have time and not be disturbed while relieving themselves of their surplus fluids. In such cases a cap of gutta-percha, placed on the neighbouring teeth to prevent closure of the jaws, is suggested. Sometimes a bit of wood or a toothpick to hold between the teeth affords gratification to a business man who is often obliged to talk.

Time forbids too much detail, but this rule we should bear in mind : When grinding off projections or cusps, cut them always towards horizontal planes, to allow for the lateral movement of the under jaw, or a failure will be made ; for when the jaws are in repose the mal-articulation may not be felt ; but on making a lateral movement it may be severely felt. Do not think that this easily described operation is easy to perform. It is, on the contrary, at times quite difficult. It demands a great deal of study and often much time to rightly perform the operation, and you will with great care quite often mistake the points of occlusion ; and you will be much surprised at the surplus material you will have to remove from the antagonizing teeth.

What ought to be done when the tooth is ulcerated ? If the same cause exists—and it almost universally does—proceed with the same remedies. A thorough ulceration cuts off all the vitality of the pulp ; but I am satisfied that the death of the pulp is occasioned by the periosteal cartilage

being so engorged with circulating fluids that it presses upon the minute vessels that pass through the foramina to the interior of the tooth, thereby cutting off the circulation and producing stasis in the pulp, as a string would if tied tightly around my finger. That is, I consider this condition the most common—more so than that the inflammation is first conveyed from the pulp to the periosteum. Empty the tooth of dead tissue and vicious fluids ; put a lance to the exterior swelling, if necessary, and give the tooth rest from all pressure. When the tooth shows that it has recovered from its shock by its restoration to normal feeling, refill without pounding on it, unless you wish a return of the trouble. Should there be a tendency to a return of inflamed conditions have the patient return at once, so that your work may be reviewed, and most likely you will find that your filling shows a bright spot on it, indicating that there is an uneven occlusion with its antagonist, or that the articulation has changed. If so, grind off the bearing spot or its antagonist the thickness of a sheet of paper, or until the patient says “it does not hit now for *sure!*” The patient knows every time when it does *not* strike, but cannot always tell you when it does strike ; and if he cannot tell you that it does not strike at all, you may conclude it still strikes.

“The pericementitis resulting from long and severe malletting upon a pulpless tooth may be relieved with a preparation of aconite and iodine,” says a learned professor. To my mind, a dentist who thus pounds a pulpless tooth should be relieved of his diploma. It is generally admitted that a permanent change takes place in the periosteum after severe inflammation. Something like weakness remains, often for a very long time. If a permanent thickening takes place, a permanent loss of tooth substance, when the articulation is close, is founded on a scientific basis.

When we have accomplished this great fact ; when we have at our fingers’ ends the means of giving relief from pain so annoying, so aggravating as the continuous grinding of an inflamed and ulcerating tooth ; when we can to a very large extent relieve this suffering without extracting ; when we can check and scatter the inflaming forces, and make the angry tooth become again quiet, and remain so, and can make the name of ulcerated tooth not a hissing and a scorn, but something within the bounds of reasonable cure, we can claim that we have gained a portion of the “high science” of dentistry, which will surely elevate us above mere tooth-fillers and tooth pullers. Is it immodest in me to claim that I

have had a great measure of success in the class of cases described? I think not; for I offer to all the theory or principle by which I have accomplished these results, and ask only in return, and for the benefit of those who suffer, a thorough study and application of the principles embraced in this paper, knowing that by so doing you and your patients will receive a satisfaction far beyond your present estimation.—*The Dental Cosmos*.

THE ANTRUM OF HIGHMORE, AND SOME OF ITS DISEASES.

By D. H. GOODWILLIS, M.D.

The antrum is a large cavity in the body of the maxillary bone. Above is the floor of the orbit, internally the nasal wall, below the alveolar process. It varies in size and capacity (one to eight ounces), and is larger in the male than the female; it diminishes in old age and after the loss of the teeth. The two antra may be unsymmetrical in size and shape, and sometimes extend into the malar bone, forming a second cavity. It is lined by mucous membrane, and communicated with the nasal cavity in the middle meatus by an opening that varies in size.

If the sinus is large, the second bicuspid and first and second molars may be in close relation to the floor. The roots of the first molar often pierce through the bony floor, and are only covered by the mucous lining of the antrum. The posterior and middle dental nerve courses in the posterior and anterior walls. Disease seldom originates in this sinus, but it is often invaded by disease from without.

Suppuration in the antrum, in the great majority of cases, is the result of suppurative pulpitis, most commonly from the first molar. Caries of the tooth sets up suppurative pulpitis, and the discharge passes through the apices of the roots into the antrum. If the trouble is from the other adjacent teeth, the pulpitis will result in a maxillary abscess, which may then extend into the antrum.

In struma, syphilis, and mercurial poisoning, the inferior and middle turbinated bones become necrosed with the antral wall. Trouble in this sinus is sometimes the result of traumatic cases.

Septicemia is one of the dangers in pent-up pus in the antrum---indeed, is more or less present in nearly all cases, particularly so if there is also a maxillary abscess.

Symptoms of antral abscess are at first a dull aching pain, and as the disease advances infra- and supra-orbital neuralgia, throbbing pain, with redness, swelling, and fluctuation, with rigours and fever. As the pus accumulates, the nasal wall---the weaker one---is quite apt to be forced towards the septum, often producing complete stenosis of the nostril, with, possibly, a discharge of pus. If there is much continued pressure, the stronger wall shows signs of distension, with swelling of the cheek, or the palate is forced downwards. Occasionally the orbital wall will be forced upwards, producing ex-opthalmus.

Treatment consists in the evacuation of the pus by the extraction of the decayed teeth, and through the socket of the first molar as the most direct course to the floor of the antrum by means of a trephine. This is most efficiently done by the surgical engine. The opening should be one-fourth of an inch in diameter to give free vent to the discharge. This should not be allowed to close until all discharge ceases.

If the case is of long standing, an opening should also be made from the inferior meatus through the nasal wall into the antrum. The sinus is to be kept clean by thymolized water, or bichloride of mercury (1 in 1000) and water. Boric acid or iodoform and camphor powder is to be blown in by means of an insufflator.

If the antrum trouble is the result of constitutional disease, appropriate remedies are to be used in connection with the local treatment.

Catarrh of the antrum is a disease in its earlier stage too little recognised. It coexists with catarrh of the nasal cavity, and is often the primary cause. The opening from the nasal cavity becomes enlarged, and the foetid catarrhal secretion passes into the nasal cavity. This is one source of the trouble called ozena. There may also be necrosis of the inferior turbinated bone.

The treatment in such cases is to make a free opening from the inferior meatus into the antrum, all necrosis to be

removed if any exists. It is to be kept thoroughly cleansed, and the powders blown in.

Hydrops antri is a disease characterized by a gradual painless distention of the walls of the antrum, probably by the changes constantly going on in the pent-up secretion. This fluid is clear or yellowish, frequently containing flakes of cholesterine, and is supposed to be the contents of cystic growths within the antrum.

Treatment consists in trephining, cleansing, and use of the powders.

The antrum is often invaded by nasal tumours, which occasionally pass through it, and emerge externally into the cheek.

Malignant disease occasionally has its seat here.

Foreign bodies, such as teeth, are found in the antrum, and sometimes are in malposition, or by some accident are forced into the sinus.

Lacerations and fractures of the alveolus, by extracting the molars, are frequent causes of antrum trouble.

Case I. Suppurative Disease of the Antrum of Highmore, with Dislocation of the Cartilaginous Nasal Septum of twelve years' standing.---Dr. D. M., of Ontario, Canada, consulted me in November, 1879, and gave the following history: In 1865, had pain in his second left superior molar, and an unsuccessful attempt was made to have it extracted. This probably resulted in rupturing the vessels of the dental pulp, as the doctor says the tooth was started from its socket and then pushed back again. Some time after, from intense pain and swelling of the face, a second attempt was made to extract the tooth. This was not entirely successful, as a root was left in the jaw. From this time the discharge began, and continued until I saw him, more than twelve years after.

He presented the following condition: First and second molars gone from the left superior jaw. Above the alveolus, at the position of the second molar, was a fistulous opening, made by trephining some years ago into the antrum. In this opening he wore a hard-rubber drain-tube, but as it was small in calibre and too high up in order to drain the dis-

charge from the antrum, it was of very little use. It also excited granulations in the cavity. A gelatinous polypus was found in the left nostril, growing from the middle turbinated bone. This hung by a pedicle over an opening made by necrosis of the inferior turbinated bone and the nasal walls of the antrum.

From the blowing of the left nostril, by closing the right with the thumb, to free it from the constant discharge, the lower end of the cartilaginous nasal septum was dislocated and turned into the left nostril, preventing respiration, except when forced. In the pharynx a muco-purulent track was to be seen on the left of the vertebral ridge, caused by the discharge passing down from the posterior nares. This produced a good deal of expectoration. This trouble continuing for so long a time, had very much affected his general health, and prevented him from attending to all his professional duties. On the doctor's first visit, in November, 1879, I only removed the polypus, as it was necessary for him to return immediately home to meet some professional engagements.

In April, 1880, he returned, and under an anæsthetic I first made an operation on the dislocated nasal septum. An incision being made through the soft parts, I amputated the protruding cartilage of the septum. The soft parts were brought together and held by small silk sutures; This healed by first intention, and in a week's time it would be difficult to tell where the incision had been made.

The next part of the operation was the trephining through the alveolar process at the position of the first molar, directly into the bottom of the antrum, by means of a large bone-cutting drill driven by the surgical engine. This opening gave exit to a foetid discharge, pent up in the cavity of the antrum. The last part of this operation was the removal, by means of the revolving bone-cutters, of the necrosed turbinated bone and the naso-antral wall, through the anterior nares. This made an opening from the nose into the antrum, extending from the floor of the inferior meatus to the middle turbinated bone and antero-posteriorly about an inch. There was considerable hemorrhage, which was easily controlled.

Through these openings the antrum was freely washed out

with thymolized water, and medication applied, which consisted in blowing into the antrum the iodoform and camphor powder by means of the insufflator. There were present at this operation Drs. Farnham, Carey, Warden, and Bucklin of New York; Marvin, of Brooklyn; and Braden, of Michigan. Twelve months after the operation the mucopurulent discharge ceased, and he is now in robust health. The respiration through the occluded nostril is quite free. The opening from the mouth into the antrum has now closed up. A permanent opening will remain in the naso-antral wall where the necrosis was removed.

Case II. Suppurative Disease with Exophthalmus.—In July, 1881, Dr. Carey referred to me Mrs. A. C., who had extensive swelling of the left cheek, with exophthalmus. Nostril on that side closed; she suffered great pain; teeth on that side much decayed. Treatment consisted in removing the decayed teeth and trephining through the alveolus into the antrum. The antrum was also trephined through the naso-antral wall in the line of the inferior meatus. The pent-up foetid pus flowed freely from the antrum through these openings, and gave her great relief from pain. The sinus was kept thoroughly cleansed and the swelling and exophthalmus gradually passed away.

Case III. Tooth found in the Antrum—I was consulted in 1869 by Mrs. S. A., of Philadelphia, Pa., who gave the following history: Having pain on the right side of her mouth, she had some decayed teeth extracted. Severe pain soon returned, and had continued some months before I saw her. There was great swelling of the jaw and face: palate forced downwards; distension of the naso-antral wall, with some discharge from the nostril and alveolar process. Administered an anæsthetic and trephined through the track of the fistulous opening in the alveolar process, which was necrosed into the antrum. On entering the antrum, the trephine struck against some hard foreign body. After the opening had been enlarged, a tooth was found in the antrum and removed with all the necrosed bone. This operation removed the entire floor of the antrum. As all the periostium was preserved, the case recovered rapidly and left very little deformity.

The probable explanation of this tooth in the antrum is as follows, viz.: A suppurative pulpitis was followed by a maxillary abscess around the roots of the molar; the pus finding its way into the antrum, produced inflammation and suppuration, resulting in alveolar necrosis, and when the teeth were extracted this one was forced into the antrum in attempting to apply the forceps.

Case IV. A tooth Developed in the Antrum.—Isaac C., aged 18 years, was brought to me by Dr. Carr. The young man had been suffering pain in his right superior maxilla, which commenced six years before, and had steadily increased up to the time I saw him. It was thought at first to be an alveolar abscess, and the doctor lanced it, but with only temporary relief to his pain. There was found on examination the following condition: There was a swelling commencing at the canine fossa and extending back to the hamular process: stenosis of the right nostril with naso-pharyngeal catarrh. All the teeth on that side of the mouth were developed and in normal position with the exception of the cuspid. From the absence of the tooth and the nature of the discharge that occasionally came away, together with the other symptoms, I was of the opinion that it was a dentigerous cyst.

Treatment consisted in placing the patient under an anæsthetic, and pulling well back the cheek by means of a retractor, and in making an incision from the canine fossa backwards one-and-a-half inches, and three quarters of an inch above the border of the gum. The periostium was now denuded from the bone, and by means of a revolving bone-knives the cyst was opened into, and quite a quantity of amber-coloured liquid escaped. On a careful examination of the interior of the cyst, the cuspid tooth was found fully developed and lying in the bone of the floor of the antrum, the root presenting anteriorly. The soft parts that were denuded were united by suture, the anterior corner being left for the purpose of cleansing the antrum and cyst. A reproduction of bone took place from denuded periostium, and six months after nothing remained to show that any operation had been performed. The stenosis of the nostril was relieved

by extirpating the inferior turbinated bone by means of the revolving scissors and surgical engine, in order to make a free passage.

Case V. Abscess of the Antrum of ten years' standing.—W. N., aged 51 years, born in England, had tooth disease, commencing ten years before, from which time he had had neuralgia, with nasal catarrh. After treatment by his family physician he was referred to a specialist, by whom he was treated for naso-pharyngeal catarrh, but he steadily grew worse and gave up treatment. Suffering from pain and the discharge, he was unable to sleep at night in bed, but reclined in a chair.

When I first saw him he was suffering intense infra and supra-orbital neuralgia, with rigors and fever; slight redness and swelling of the right cheek; muco-purulent discharge from the right nostril. All the molars and the second bicuspid were gone. The bicuspid had been removed not many days before.

Treatment consisted in trephining through the alveolus into the antrum, and in enlarging the opening in the naso-antral wall into the inferior meatus. The discharge was very foetid. The antrum was kept thoroughly washed out, and boracic acid blown into the antrum and into the nostril. The passages were kept open, the treatment carried on for several months, and he entirely recovered.—*Philadelphia Medical News.*

Dental News.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

The next meeting of the above Society will take place at the rooms, 40, Leicester Square, on Monday, March 2nd at 8 p.m. Casual communications by Messrs. Oakley Coles, St. George Elliott, W. Hern, W. A. Hunt, A. Cartwright, Newland Pedley. Paper by E. Charlesworth, Esq., F.G.S., "On the Fossil Teeth in Extinct Animals," in the Museum of the Odontological Society

DANIEL HEPBURN,
R. H. WOODHOUSE,
Hon. Secs.

ODONTO-CHIRURGICAL SOCIETY OF SCOTLAND.

The Odonto-Chirurgical Society and L.D.S. dinner will be held on Friday, March 13th, at 6.30, in the Balmoral Hotel, Edinburgh; Dr. Robert Reid (Edinburgh), in the chair, and Mr. Rees Price, L.D.S., Eng. (Glasgow), will act as croupier.

JOHN S. AMOORE, *Hon. Sec.*

STUDENTS' SOCIETY OF THE DENTAL HOSPITAL
OF LONDON.

ORDINARY GENERAL MEETING, held 9th February, 1885.
C. Truman, Esq., M.A., President in the chair.

The minutes of the previous meeting were read and confirmed.

Messrs. T. H. Van du Pant, H. Williams, and H. J. Moore, having signed the Obligation Book, were formally admitted to membership by the President.

Messrs. J. Palethorpe, and W. A. Moore were proposed for election by Mr. Goodby and seconded by Mr. Colyer.

Messrs. Gilbert and Kendrick were duly elected members of the Society.

The President announced that he had received a letter from Mr. R. H. Woodhouse, informing him that in the opinion of Mr. Arthur S. Underwood and himself, the paper read before the Society by Mr. A. H. Tester in 1882 was most worthy of the Society's prize for that year.

The President also called the attention of members to laws XXIX and XXXI which will in future be strictly enforced. The former provides that the papers read before the Society must be submitted for the approval of the Council at least 7 days previous to the general meeting; and the latter that a member failing to produce a promised paper on the appointed day shall be subject to a fine of 5/-.

Casual communications being called for Mr. Mansbridge shewed the model of an upper jaw with a supernumerary tooth in situ.

Mr. Murray gave notice that at the next meeting of the Society he would move that part of the balance in the Treasurer's hands be devoted to obtaining a group photograph of the members of the Society.

The President then called on Mr. Murray to read his paper on Mesmeric Anæsthesia. [See page 197.]

In the discussion which ensued, the following members took part : The President, Messrs. T. Bird, J. P. Smith, G. G. Campion, W. J. England, C. R. Smith, E. P. Collett, E. Latchmore, Lloyd Williams, and J. S. Mansbridge.

At the conclusion of the discussion Mr. Murray made an exhaustive reply, and a cordial vote of thanks was passed him for his very successful paper.

The next meeting of the Society will be held on Monday, March 9th, when Mr. W. M. Gabriel will read a paper upon Reflex Facial Paralysis.

THE VICTORIA DENTAL HOSPITAL, MANCHESTER.

The annual meeting of the Victoria Dental Hospital, Grosvenor Street, All Saints, was held yesterday in one of the committee-rooms of the Town Hall, Albert Square. Lord Egerton of Tatton, one of the patrons, presiding. The first annual report, which was presented by Mr. H. L. Knoop, the hon. secretary, stated that since March last, when the arrangements were completed to take over the assets and liabilities of the Manchester Dental Hospital, the hospital had met with considerable and continued success, and the poor or deserving, on whose behalf the establishment was deemed desirable, were availing themselves more and more of the benefits it offered. The arrangements which had been made for keeping the hospital open three evenings in the week had been much appreciated, the average evening attendance of patients having greatly exceeded that of the morning. In November last, the hospital was formally recognised by the Royal College of Surgeons of England. The Committee reported with regret that the annual subscriptions did not at present amount to quite £100, which sum was insufficient for carrying on the work in such a manner as they would desire, and as the character and objects of the charity seemed to require. They therefore earnestly appealed to the generosity of the public for its support and countenance. The report of the Dental Committee stated that since the opening of the hospital to the 31st of December—a period of about ten

months—the number of patients admitted had been 2,720. The Treasurer's statement showed that there had been received in donations £325, and in annual subscriptions £99 ; and smaller items brought up the total receipts to £442. After the expenses of formation and establishment of the hospital, &c., there remained a balance in the banker's hands of £226. The Chairman, in moving the adoption of the reports and financial statement, said it was a matter of congratulation that another hospital for the deserving poor had been added to the many liberally supported and excellent charities in Manchester. The institution appeared to have encountered some difficulties at the outset, but these were now surmounted, and it was unnecessary that he should refer to them. The hospital was in a thoroughly satisfactory condition, and appeared to be appreciated by those for whom it was intended—viz., the poor. The opening of the institution in the evening no doubt largely increased the work of the dental staff and it was gratifying to find that there was such a noble spirit of self sacrifice amongst the members of the medical profession generally on behalf of the deserving poor.—(Hear, hear.) He had no doubt as the institution became better known it would be a still greater tax upon their time and attention. He found that during the last six weeks above 700 persons had been treated at the hospital. As he understood, life and other subscriptions had been sufficient to start the hospital on a satisfactory basis, but there was hardly a sufficient amount of subscriptions to meet expenses, and one object of that meeting was to appeal to the public at large for support, in order that the working expenses might be met. It was satisfactory to find that the institution had been formally recognised by the Royal College of Surgeons, inasmuch as it would afford to the general public a sufficient guarantee of its position as a gratuitous hospital.—(Hear, hear.) Mr. F. A. Huet seconded the resolution, which was passed. The Chairman moved that the Mayors of Manchester and Salford be appointed vice-presidents of the hospital. The motion was seconded by Mr. Reuben Spencer, and adopted. Upon the motion of Mr. F. W. Travers, seconded by Mr. W. H. Wilson, Messrs. W. A. Coppinger, A. Crewdson, and Reuben

Spencer were appointed trustees of the hospital. The Committee were re-appointed on the motion of Mr. H. Campion, seconded Mr. T. Tanner. The Rev Father Anderdon proposed, and Mr. Kissel seconded a vote of thanks to the governors, members of the Committee of Management, medical staff, and hon. secretary, treasurer, and auditor, for their services during the past year, which was passed. Mr. Coppinger, in replying, said the Committee desired to receive at least £50 a year more in annual subscriptions bringing up the total to £150 a year, in order to meet the requirements of the hospital. He felt certain that fact only needed to be made known in order to ensure a generous response. Mr. Knoop also replied. In answer to the Rev. E. Hewlett, Mr. Knoop said it was not possible to make application for a participation in the Hospital Sunday and Saturday Fund until they had existed for a year and had presented a report which had been audited by a public auditor. The annual meeting having now been held and a report presented, application would at once be made. Mr. Huet pointed out that the hospital had been opened since July, 1883. The meeting concluded with a vote of thanks to the chairman, proposed by D. Shaw and seconded by Mr. Crewdson.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

ANNUAL GENERAL MEETING, Monday, Jan. 12, 1885.

(Concluded from page 187)

PRESIDENT'S ADDRESS.

GENTLEMEN,—A voluntary office of honour may be coveted and longed for, and it may be accepted with alacrity and self-confidence or with much misgiving and apprehension on the part of the officer; still, in whatever mood it may be accepted, the acceptance is always a voluntary act. Not so its resignation. The period arrives when time gently taps the greatest and the best on the shoulder and bids him move on—and move on he must; for by that gentle tap the fastenings of the robes of office are loosened, the badge of power and distinction passes on to another, and the recently-distinguished individual steps down from his exalted position and becomes even as other men are.

Gentlemen, without consulting my wishes in any way,

time has tapped me on the shoulder to-night, and I resign to you the trust which you confided to me twelve months ago.

You have elected my successor, and I must congratulate you on having bestowed your suffrages on a gentleman who will prove an honour to his high office, and whose scientific ability and reputation are only second to the deep and practical interest he takes in the progress of his profession. Under the Presidency of Mr. C. Spence Bate, F.R.S., I think that we may anticipate a session of more than usual interest.

You have heard the reports of our office-bearers. Our Librarian has, I think, brought our fine collection of books into a state of order and accessibility such as should please the most irritable scientific book-worm. Not content with that, however, he has, in addition to other collateral matters, been able by determined energy and perseverance, and despite the ingenious perversity and carelessness of members, to bring our members list into as perfect and correct a form as the mutability of human affairs will permit. Our Curator, with his able assistants, has maintained for our museum the high character for order and classification which he has stamped upon it since his advent to office. The Council has responded liberally, and I think wisely, to the calls which have been made upon the funds of the Society for the improvement of our valuable, and, speaking as a dentist, I may say unique collection. Hitherto we have only possessed the cast of the skull of a gorilla; now, however, we have a veritable skull, not only interesting in an anatomical sense, but presenting some pathological features in the teeth of special interest to us; besides this we have the hyoid bone and over a hundred other bones of the adult gorilla skeleton. These will all be mounted, and beside them will be placed their human homologues, forming a most instructive study in comparative anatomy.

Passing onward and upward by the natural law of evolution, I think I may again venture to congratulate the Society on the acquisition of the excellent portrait of our esteemed ex-President, John Tomes, F.R.S. Notwithstanding the heavy expenses which have had to be met this year, our Treasurer has been able to report a substantial balance in our favour. The Editor of the Transactions reports himself to you once a month during our session in a way which I hope satisfies you all. I venture in the name of the Society to thank these gentlemen for their self-imposed labours so cheerfully given, as also our three invaluable Secretaries. If ever the adage that "one volunteer is worth two pressed men"

requires verification, the office-bearers of this Society may be taken as a good criterion. Last, but not least, would I thank Dr. Langmore for the unostentatious but effectual manner in which he applies his literary skill to the assistance of the Editor of our Transactions.

And now, gentlemen, our pæan is done. The loud timbrel has been sounded, the tabour has been beaten, and now we must take up our harp amongst the willows, for Death has been busy in our ranks. We have to mourn the loss of Mr. A. Rogers, of Cambridge, Mr. W. I. Doherty, of Dublin, Mr. J. D. Grant, of Jersey, and on Saturday last it was my sad duty as your representative to follow to the grave the remains of one of our ex-Presidents, John Rigden Mummery. It seems but yesterday when he was an active member of our Society, and a constant attendant at our meetings. He was a frequent contributor to our Transactions, and his reputation as an Ethnologist had passed far beyond the limited circle of this Society. He was ever on the watch to bring his favourite study to bear on questions connected with his own specialty, and the volumes of our Transactions are enriched by the records of his observations on the teeth of different races, and the influence which their modes of life and the character and preparation of their foods may have had on the development of their jaws, and on the durability of their teeth. Those who knew him as an indefatigable worker may ere now have missed him as such, although hoping for his return, but those who also knew him as a genial, warm-hearted friend will miss him in two forms, neither of which will readily be replaced.

Turning to myself, gentlemen, my term of office has been peaceful and uneventful. Our Transactions are full and well up to the standard of interest, and our discussions have, I rejoice to say, been brisk and instructive. The changes which have been introduced during the past year have been slight, and affecting matter of detail only. As President I have avoided attempting to introduce any innovations upon our established lines of procedure: 1st, because I think that recent changes require consolidation before we attempt fresh ones: 2nd, because I think that the want of change should be principally felt and expressed from without, and be made known by members to the Council; 3rd, because I think that members of the Council should propose changes, whether in detail or of a radical character. The most clear-headed President will find plenty to do if he conduct the affairs of the Society prudently and quietly; but if by force of charac-

ter or persistency he impose changes on a too subservient Council, he may leave to his successor a legacy of trouble and care which he himself should have borne, but which the shortness of his term of office enables him to avoid. In conclusion, let me ask you all ever to think carefully over the the affairs of the Society and how best to improve it. The Council—I say it with assurance—is only too anxious to do anything and everything for its prosperity. Try also to induce your professional friends to become members. It is a duty which they owe alike to themselves and to the profession.

VOTES OF THANKS.

Mr. Charters White said he had been asked to propose a resolution which he knew would be readily supported by all present. It was to propose a hearty vote of thanks to the retiring President for the time and trouble which he had given to the management of the affairs of the Society during his year of office. The members were well aware how ably and courteously he had presided over the meetings, and, as a member of the Council, he (Mr. White) would add that the President had shown equal ability in the Council room keeping every one strictly to the business in hand and checking all attempts at irrelevant conversation.

Mr. Cunningham said he wished a Smiles would arise to write the biographies of some of the most prominent members of the dental profession. If such a series should be written Mr. Turner's life ought certainly to be included amongst them, and an appropriate motto for it would be the sentence which occurred in the President's Inaugural Address, that "it was a far cry from the workman's bench to the chair of the Odontological Society." He knew that Mr. Turner's example had been of great use to some of the younger members of the Society, and he wished it could be brought more widely under the notice of young men entering the profession. He had great pleasure in seconding the resolution.

The resolution having been carried with loud applause, the President said he could only thank the members briefly for the kind way in which they had received it. At the same time it would not be fair for him to take all the credit of the smooth working of the Society during the past year. Had it not been for the constant and valuable assistance which he had received from the Secretaries and the Council, all that he could have done would have been perfectly useless. He should always look back with great pleasure to his year of office as President of the Odontological Society.

British Journal of Dental Science.

No. 413. LONDON, MARCH 15, 1885. VOL. XXVIII.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

PRESIDENTIAL ADDRESS.*

By C. SPENCE BATE, F.R.S.

GENTLEMEN,—In attempting to address you on this occasion, I must appeal to you in two separate portions: those who have received the honours of the Presidential Chair, and those have yet to obtain that distinction—the highest mark of professional recognition that any of us can hope to attain.

The former I would ask to remember what their feelings were when this position in the Society was conferred upon them, and by their own high appreciation of the honour, to believe in mine.

The latter I would beg to pause and think what their feelings will be when the time comes for them to be elected.

And both I will ask to multiply the sense of the honour 250 times, being the amount in miles to which you have called me to fulfil the duties of President of the Odontological Society of Great Britain.

To this I will add, what I am sure you will generously accord, some forbearance for any shortcomings on my part, and you may obtain an approximate idea of my sense of your kindness and the honour you have done to me.

When in 1856 the late Mr. Arnold Rogers read a paper "On the Reduction of Limaille," he commenced the literary history of this Society, the career of which has quietly and peacefully revolutionised the practice and position of the dental practitioner.

Before this Society was formed the members of our calling were not only scattered, but they existed in a common dread of each other. If a man had an idea in his mind that he

* Delivered before the Odontological Society of Great Britain.

thought was advantageous, he felt it to be his duty to keep it to himself, fearing that his neighbour might rob him of a privilege. Weak in himself, he was jealous of those around him, not being able to realise that individual progress is always slow.

It was on the 6th of November, in 1856, that a few earnest individuals from the North, South, East, and West of England—and they were very few—met to commence this Society, which has done such great things in the scientific progress of our profession, by gathering knowledge from all parts of the world and presenting it open-handed to those who are desirous of learning.

When this Society commenced, there was scarcely any knowledge of work beyond that which could be produced from gold, silver, and bone ; mineral teeth had been scarcely a decade in existence, and these were not of that strength and adaptability as to exclude the human tooth from being largely utilised.

Mechanical work was the great aim of the dentist, and to save a tooth that had pained was seldom attempted unless the dread of extraction overcame professional experience.

When this Society was once formed, communications came in quickly, and men were willing to give their experience when they found others desirous of doing the same. Thus communications were forthcoming on all subjects connected with the teeth, and these it will not be inconvenient to divide into the following, viz : Mechanical, Anatomical (human and comparative), Physiological, and Surgical Dentistry.

As the mechanical work was thought to be of the greatest importance, it naturally followed that a paper regarding it should be among the first read, and another soon followed in which Mr. Duffe informed us that the introduction of palladium, dental alloy, and other white metals as substitutes for gold and silver, was unjustifiable, even where economy was a consideration ; that the ivory of animals was variously used, and that of the hippopotamus more nearly resembles in character human dentine than any other substance employed by dentists. Mineral teeth, as introduced by the English and American manufacturers, he compared with those of the

French make, but reported that the best forms were far from perfect, being wanting in strength.

Soon followed a paper by Mr. Statham on Plate-casting. Instead of striking plates out of sheet gold, he recommended a mould being made with loam and plaster of Paris, or a composition of blacklead, into which he poured the metal; and in this manner obtained a plate of the form of the mouth, with band or clasps in one piece; to this he soldered the pins to carry the teeth.

This communication was followed a little time after by one from Mr. Thomson on his mode of "Striking up plates," which was by using a machine somewhat like a guillotine, or pile-driver, the pedestal or base of which is 2 feet high, of cast iron, and weighed nearly 4 cwt.; from a cross-beam between two wrought-iron pillars a hammer of $31\frac{1}{2}$ lbs. descended upon the metal die, and so drove it home with the most satisfactory results,

About two years after, Mr. Fox, of Gloucester, gave us his experience of an hydraulic press for swaging gold plates. For this purpose he had a small press of at least 10 tons pressure made, and his experience justified his anticipations, it being a valuable addition to the capabilities of his workshop, taking but little room. It is simple in its work, and takes but little time—in some cases no more than the old method, and where it does occupy more time it is quite worth it, for the ease with which it produces a good plate. In plates for single teeth, Mr. Fox found the press of very little advantage, and in some cases preferred the hammer to the press. Thereby, I think, demonstrating that after all it is the brains behind the tool that has to do the work.

Just at this time metallurgical research introduced to our notice the power of obtaining *aluminum* in considerable quantities, and Mr. F. G. Harrington brought to the notice of this Society a mode of casting beds and palates for artificial teeth in this metal. The arguments in favour of this new metal over gold were that it possessed the property of resisting the action of all such acids as were likely to come in contact with it in the mouth; its lightness, colour, appearance, and durability. He thought that a set made with this metal

would be double the value of one made with gold. The meta was said to be more easy and pleasant to work than gold, and its expense was below that of bone.

Some few months after the previous communication, Dr. Blandy, of New York, introduced to this Society his *Cheoplastic* method of mounting artificial teeth. Instead of aluminum he used a quickly melting compound, which was either type metal or something very like it. This he cast in moulds similar to Mr. Harrington's; but the great advantage that he claimed was, that his method enabled the manipulator to introduce the principle of atmospheric pressure for the he purpose of retaining artificial palates in the mouth.

This method was almost immediately followed by a communication by Mr. Putman, of New York, "On the Vulcanite Base as applied to Dentistry." It is now just six-and-twenty years since this communication was read, and this was shortly followed by one by Mr. Childs "On Super-heated Steam," and another by Mr. Patrick "On Vulcanising by Dry Heat."

Small improvements in the apparatus used were continually being made, and about a year after Mr. Putman had read his paper, Mr. Dewar introduced to the Society a self-packing vulcanite apparatus somewhat similar to that which Mr. tartrell has more recently perfected.

Gutta-percha had for several years been used in the hands of a few persons as a base, but it scarcely received the notice of the profession until Mr. Truman brought it before this Society in a communication "On the Necessity of Plasticity in Mechanical Dentistry."

These communications were the result of the first five years of the Society's existence. The second five years passed without any paper having been read that belongs to mechanical dentistry, but at the end of that time Mr. Balkwill gave us one "On the Best Form and Arrangement of Artificial Teeth for Mastication," and Mr. R. Hepburn another "On Hard rubber," in which he states that since the reading of Mr. Putman's paper in 1861 we have been rapidly progressing in the knowledge and use of vulcanite, and we now understand its real value, and feel better able to judge in what cases it is best adapted. Year after year gives us some new

if not improved, flask or vulcaniser, and various combinations of rubber are being continually introduced, each one said to have some good and peculiar quality which its predecessor did not possess, but all revealing the large use of vulcanite, and the interest taken in it.

This communication, which was presented to the Society in 1866, reads as if it were the experience of the present day, showing how little progress in dental mechanics has been added to our knowledge since that time, particularly in relation to "one of the greatest objections frequently urged against the use of vulcanite; I allude to the injurious effects it is said to produce upon the mucous membrane of the mouth of some patients, and even to affect their constitutions generally. It has been alleged that small ulcers, sores, and other symptoms of salivation, both local and general, have been exhibited after the use of rubber cases, resulting, it is said, from the bisulphide of mercury or vermilion, used as a colouring agent in the manufacture. In confirmation of this it has been stated by some that the globules of mercury may be seen by the naked eye oozing from some of the rubbers supplied for our use. So far, I have not been able to detect free mercury in any of the numerous rubbers which have come under my observation. I have treated and subjected these rubbers to extreme pressure, with gold and copper foil between the layers, without being able to express any signs of mercury, or the slightest stain of it on the foil. . . . We know that bisulphide of mercury is an insoluble powder, incapable of being affected by nitric or muriatic acid, and I find no evidence to show that it can be acted upon by the secretions of the mouth, more especially when retained in combination with the hardened rubber compound."

With the discovery of vulcanite as a base for artificial teeth, it would appear that dentists imagined that research had culminated in a climax; for with the exception of the beautiful and ephemeral *celluloid*, which has been brought before the Society by Mr. Oakley Coles at one time, and later still by Mr. Hunt, of Yeovil, no fresh stride has been made in this direction.

With improvements in materials and power of working,

ambition appears to be satisfied, and perhaps when Mr. Verrier has enabled us successfully to add a continuous porcelain gumwork to the vulcanite base, we shall have approached within a measurable distance of a means of attaining as perfect an artificial denture as may be practicable.

In the subject relating to the anatomy of the mouth, both comparative and human, we are not so rich as I think we might be, but those communications that we have bear the impress of research. It was early in the history of the Society that Mr. Cattlin read a paper "On the Form and Size of the Adult Antrum," from which we learn how varied is the form of that cavity, and how important it is that the operative dentist should be familiar with its relations to the neighbouring structures which he has to treat.

A year after, Mr. Mummery, who has been so recently taken from us, and whose loss we have so much to deplore, described, in three papers copiously illustrated, the Structure and Adaptation of the Teeth in the Lower Animals, and their relation to human dentition.

Dentition being co-extensive with vertebrate life, and in a different character in many invertebrate forms, it is highly desirable that we, who take but one organ as a special study, should encourage a study that embraces the entire study of the subject; for, in the words of the renowned Abernethy, "the man who confines his attention to a single object will have a mind as contracted as the object he contemplates. Knowledge of various kinds is requisite to form the true surgeon; it serves like light shining from various sources to illuminate the object of his researches." And after having directed attention to the more characteristic forms of dentition in the lower animals, the author says that apart from the rich store of intellectual gratification to be derived from the study of the infinite variety of special adaptation of structure to function, throughout the world of animal life, it serves an important end in training the observant faculties, which cannot fail to be serviceable in a profession such as ours.

Nearly six years elapsed before any purely anatomical paper, either comparative or human, again appeared, when Mr. Ibbetson read one "On the Teeth of the Fossil Fish in

the Palæozoic and Mesozonic Rocks." This communication was chiefly illustrative of external form, and the quantity of the several families of fish in relation to the geological record.

This was followed about a year later by a paper "On the Dentition of the Mole," illustrating the development of the deciduous teeth and their relation to the permanent set, more particularly with a view to demonstrate the homology of the great double-rooted canine tooth.

This was almost immediately succeeded by a paper by Professor Owen "On the Dental Characters of Genera and Species, chiefly of fishes, from the lower main seam and shales of coal, Northumberland." In this communication the distinguished Professor said that he had selected his paper "from a supplementary chapter for a second edition of his 'Odontography,' some materials not heretofore made public; and," he added, "I feel pleasure in this opportunity of co-operating with the practical members of the Society in their purely scientific aims to establish their most useful branch of surgery on the broad basis of Hunterian physiological principles, as deduced from a survey of the modifications of dental structures and phenomena throughout the animal kingdom."

This was immediately followed by a paper by Mr. Balkwill "On the Relation between the Forms of Teeth and the Conditions of Life in Mammalia," in which the author stated that he treated the subject rather as one of mechanics than of natural history. This communication was succeeded by two papers by Dr. Murie "On some Abnormal and Diseased Dental Conditions of Animals," in which he demonstrated the relation that exists between the dentition of the inferior creatures and man—whether healthy or diseased; and he further states that "those rare cases, the red-letter ones in every dentist's experience, are where broad views come to bear, and where, as I conceive, or can not only look for, but find, in the lower animals, a clue to unravel the tangled web often wound round obscure dental changes in man."

The etiology of dental disease requires the microscope to master it, and in the paper by Mr. Charters White, "On the Minute Anatomy of the Pulps of the Teeth," its necessity is demonstrated in the researches which induced him to deter-

mine the fibrils of the nerves of the pulp in their relation to the sensitive dentine. This was followed by some notes "On the first or Milk Dentition of the Mammalia, by Professor Flower, F.R.S., who, in concluding, said: "I think that I have shown enough to prove the importance and interest of a closer study of the characters and period of the development of the milk teeth, and by showing the deficiencies of our present knowledge, to stimulate members of this Society who may have leisure and opportunity, to contribute whatever is in their power towards a fuller elucidation of the subject."

Immediately succeeding, we have a communication by the late Professor Rolleston, F.R.S., "On the Development of the Enamel in the Teeth of Mammals," as illustrated by the various stages of growth demonstrable in the evolution of the fourth molar of a young elephant (*Elephas Indicus*), and of the incisor teeth in the foetal calf, in which the author stated his belief, that previously it had not been recorded that the enamel of the elephant's molar, as also that of the mastodon, presented the same decussating arrangement of the inner portion of its enamel which Mr. Tomes has figured as being found in some of the Rodentia, thus giving a fresh illustration to the rodent affinities of the elephant, which have been so often commented upon.

After receiving a description of an *Odontome* from Mr. Charles Tomes, as exhibited in a specimen that sprang from a small pedicle in the median groove which traverses the right lower molar of a horse, in which there was neither dentine nor enamel visible, but only a convoluted mass of cementum, we get a paper by Mr. Henry Moon "On Irregular and Defective Tooth Development," in which he says that the dental irregularities of excess and defect might have light thrown on them by being considered together with the normal architecture of the teeth.

The fact that the crowns of the human teeth are formed around a single dentinal system seems to have prevented the full recognition of the fact that the variety of form in the several classes of teeth is due to a multiplication and modification of a simple and elementary tooth form. These

elementary forms appear to re-assert their autonomy under disturbed conditions of development. One of these denticles is shown to us in the most common and simple of supernumeraries, consisting of a conical crown and tap root. When we remember that the typical form of these supernumerary teeth closely resembles, both in structure and form, those of the cetacean type, where the earliest compound tooth is shown in the foetal whale in Professor Owen's "Odontography," where two germs are seen to unite in one sac, I think that the study of these rudimentary representations of lost organs would form an interesting and important chapter in the history of evolution, that would fully compensate for a close and persistent investigation.

In a communication "On some Forms of Dentine Calcification and their bearing on Dental Pathology," Mr. Charles Tomes has shown how valuable and instructive is the study of the dentinal tissues of animals in relation to diseases and changes in the human teeth, when read by the light of an observant mind. He compared the Mammalian dentine with the vaso-dentine, the plici-dentine, and osteo-dentine, as seen in fish, and the globular dentine, as seen in the pulp of various animals, and which differs more in size than kind from calcospherites, which can be artificially produced.

It would seem, then, that we may place these several forms of calcification of dentine pulps in a scale, passing from hard dentine as the highest, through vaso-dentine and osteo-dentine to globular dentine as the lowest and least specialised. Thus the tissues produced as morbid structure are normal tissues in certain other teeth.

In May of the same year Mr. Hilditch Harding furnished a paper "On the Absorption of Bone and Tooth Structure," and twelve months afterwards Mr. Arthur Underwood furnished one "On the Functions of the Nerves of Taste," in which he arrived at the conclusion that the glosso-pharyngeal nerve presided over the whole sense of taste, both at the root and over the tip and sides of the tongue, and that it is the only nerve of taste, and that the second and third divisions of the fifth pair have as little to do with this sense as the first division has to do with the sense of sight.

With the exception of notes by Professor Flower, F.R.S., "On the Specimens of Abnormal Dentition in the Collection in the Museum of the Royal College of Surgeons," and which was communicated to promote the scientific consideration of the subject connected with the profession, no paper on the anatomy or physiology pertaining to the organs of the mouth appears to have been communicated to the Society until 1883, a period of four years, when Mr. Bland Sutton, the senior Demonstrator of Anatomy at Middlesex Hospital, read one "On the Developement of the Inferior Maxilla." In this communication the author contends that the several bones which go to build up the compound jaw of fish are represented in the simple bone of the Mammalia, and concludes that actual observation, reinforced by the application of theory, and rendered more than probable by the appeal to comparative anatomy, support the view of compound nature of man's inferior maxilla.

(To be continued.)

DISCUSSION UPON MR. STIRLING'S PAPER UPON THE TREATMENT AND FILLING OF THE NERVE CANALS IN TEETH.*

The President announced that the discussion upon Mr. Stirling's paper on "The Treatment and Filling of the Nerve Canals in Teeth," as read at the last meeting, would then take place, and called upon the Secretary to read a communication he had received upon the subject from Mr. Watson, who was absent:—

"I think on the whole the treatment of such cases as recommended by Mr. Stirling is very thorough; at the same time I take exception to some of the things said in his paper. At the top of page 4 of the Transactions, he says he does not remove the pulp after devitalising until four weeks after; this, I think entails a great liability to periodontal trouble. It is much better to remove the necrosed pulp at once, or in three or four days at most, after having dressed it with tannin and glycerine. On pages 5 and 7 we are cautioned

* Before the Odonto-Chirurgical Society of Scotland. See page 292.

not to use too much force in syringing out with water the canals of teeth, as it might force septic material through their apices ; this I do not see the possibility of doing, unless the point of the syringe were fixed into the canal by means of cotton wool soaked in sandarach varnish. At the bottom of the page Mr. S. recommends the application of hot fomentations to the face to promote suppuration. The old-fashioned treatment, a roasted fig split and applied to the labial and lingual surfaces of the gum over the affected tooth, is both safer and better, or the application of capsicum bags to the gum over the roots of the tooth. Mr. S. does not make mention of that useful drug in such cases, viz., calcium sulphide, which has such a beneficial effect in promoting the absorption of inflammatory exudations, and in retarding their formation when used at an early enough stage. I do not quite agree with Mr. S. in cutting away so much good tissue in the treatment of posterior approximal cavities, preferring the treatment advocated in my paper on alveolar abscess, read before the Society some two years ago, viz., filling loosely the pulp chamber with cotton wool, and then filling the posterior approximal cavity with amalgam or other stopping, and next day drilling a good large hole right through the centre of crowns of teeth. By this means direct access can be obtained to the canals, making treatment much easier and more thorough. Mr. S. condemns root filling with cotton wool and antiseptics. I on the other hand uphold this treatment as preferable to the other, in respect that if anything goes wrong with the tooth, the cotton wool root filling can be removed, whereas in the other case it is almost impossible to remove the cement ; at the same time I may say I only fill the root, or roots, with cotton or silk, and antiseptics, the main portion of the pulp cavity being filled with cement."

Mr. Macgregor said, I have one remark to make—I find that none of the previous speakers have mentioned a mode of treating acute periostitis condemned by Mr. Stirling, but which I have occasionally found beneficial—namely, that of applying a leech to the gum. I may mention a case in point. A gentleman from the country called upon me last week,

complaining of pain in a tooth stopped some six years ago, which then gave me some considerable trouble. I applied the usual remedies at that time, and told what to do should the tooth continue to pain him. He came in this week, and as it had lately become so troublesome as to prevent him from getting any rest, he wished me to extract it unless I could give him relief by any other means. As he could not well afford to lose the tooth, I thought I would see what benefit could be derived from grinding it down, so as to free it from pressure against its opponent in the opposite jaw, but this gave no relief; I then applied a leech, and although it itself drew but little blood from the gum, a good deal flowed afterwards from the wound. Before leaving to catch his train he told me that the tooth felt more comfortable than it had done since the attack, but if there were a return of the pain he would come and have the offender removed; and as that was now four days ago, I presume the trouble has subsided.

Mr. Campbell disapproved of the practice recommended by Mr. Stirling of leaving the devitalised pulp for four or five weeks before filling the roots. He believed the nerve instruments, such as Mr. Stirling made and used, would be likely to cause considerably more pain, should there be vitality in any part of the nerve, than such instruments as Morey's nerve canal drills, which he (Mr. Campbell) made use of. Mr. Stirling's nerve instruments are round, and held in the hand, rotation being necessarily slow, whereas the Morey nerve drill (not for enlarging the canal) being augur-shaped and rotated by the engine, does its work quickly, and should there be vitality about the apex, it is destroyed in an instant. In most cases, Mr. Campbell applied the rubber dam, as he invariably extracted the pulp and filled the tooth "right away."

After the cavity of decay had been prepared and ready to have the soft tissues taken from the canals, he invariably saturated the cavity with sulphuric ether before using the Morey drill to clear out the canals, in case there might be some vitality still remaining about the pulp.

He believed sulphuric ether to be the best local anæsthetic

we had, except cocaine, of which he could not yet speak. He also used ether for obtunding sensitive dentine with considerable benefit, and recommended members to give it a trial.

Mr. Campbell could not understand why Mr. Stirling so undervalued the teeth of patients who "had reached the shady side of middle life," Surely they are as valuable, and certainly more amenable to treatment in periostitis, namely, freeing the tooth from pressure by cutting the antagonising tooth. Mr. Campbell quite agreed with Mr. Macgregor: he also had often found great benefit from the application of a leech to the gums.

Mr. Macleod said that in connection with Mr. Stirling's remarks on the opening of canals by drilling, he had a bicuspid to show, which would illustrate the great danger which attended that operation at all times, and more so in teeth posterior to the incisors. This specimen was a second bicuspid upper left with a distal cavity. The dentist in this case had succeeded so well that he had drilled right through the cementum, and the alveolar septum separating the two bicuspid, and judging from the quantity of silk thread which was found protruding from the drill hole, he must have been impressed with the conviction that he was getting this canal thoroughly filled any way. In the case of bicuspid, it is frequently impossible to enlarge the canals by drilling, owing to the thinness of the wall at the centre of the approximo-distal section of this hour-glass, or figure-eight shaped canal.

Mr. E. Cormack said that he did not think it advantageous to leave a pulp, after being treated with arsenic for a month, because when for any reason he had done so, he had as a rule found that the root canals were filled with a sanious fluid, which was only got rid of with great difficulty. He considered that few pulps were removable within forty-eight hours, except with pain more or less acute. Dr. Walker's treatment of following up the application of arsenic with carbolic and tannic acids, was a decided improvement on the old plan, but in his (Mr. Cormack's) hands, the removal could not be effected so quickly and painlessly as Dr. Walker would lead us to expect. He agreed with Mr. Stirling that

the opening up of canals with drills or broaches was not a course to be commended ; in fact, by this treatment, he was inclined to be much harm might result. Mr. Macleod had just handed round a bicuspid through the root of which a drill had been passed some time ago ; he (Mr. Cormack) had extracted an upper molar tooth, in which three roots were perforated in a similar manner. In order to freely expose a diseased pulp, he was in the habit of applying to the dead bone covering it, a paste (lately recommended by an American dentist in the *Cosmos*) consisting of carbolised resin and caustic potash, to lessen the pain of piercing the diseased pulp ; this at first is apt to cause a sharp twinge of pain, which, however, soon passes off, and allows the operator to gently scrape the dentine away till the pulp is exposed. Owing to the irritating nature of the agents used, the surrounding parts must be protected by the coffer dam. In the event of any gangrenous matter lurking about the canals, a solution of corrosive sublimate (1-1000) applied without force, and then followed by loosely rolled pellets of cotton wool, with carbolic and tannic acids, are often sufficient to bring about a cure, and for a permanent filling, cotton wool with white stopping entangled in its meshes, is at once easy and effective. Mr. Cormack concluded by saying that he did not think that Mr. Stirling's scruples, as to the extraction of a tooth, affected by acute periostitis, would be generally shared by the members of the profession ; and for his own part, he thought that the recommendation to apply a hot cloth over the cheek might be more likely to produce graver results than that following the pointing of an alveolar abscess internally. In hospital practice it was not uncommon to see facial disfigurement caused by a too rigid adherence to this procedure.

The Secretary (Mr. Amore) said that he thought that from what he had heard on this and other occasions from different operators, that the pain caused by the removal of a nerve, even after its treatment with arsenic, was often underrated, truly, it was momentary, and its intensity varied immensely in different individuals, according to their temperament and susceptibility to pain. If he might take himself

as an average example, in one molar the nerves had been extracted from the three roots after a week had been allowed to elapse, subsequently to the application of the arsenic, in another upper molar the same had been effected after two applications of arsenic, extending over a month. Both operations were painful, and in the first instance, as each nerve was being removed, the pain could be felt flashing up the side of the face, over the eye, in the second it was less acute. He had often been assured by operators that "the way they did it," never, or only very rarely caused pain, at all events, none to speak of, but he was inclined to think that in these instances the suffering occasioned was underrated, that is, if the operation had been thoroughly performed and the nerve divided at the apex of the root. It was his experience that there was always more or less pain, though at times but slight. He had not given Dr. Walker's plan a fair trial perhaps, but so far as his experiences went, they coincided with those of Mr. E. A. Cormack; the theory was good but the results were disappointing. He approved of what had been said condemning the practice of enlarging the pulp canals with burrs, flexible or otherwise; it was a risky practice, and in his opinion unnecessary, as by such a method as described by Mr. Stirling, or a variety of the same, the canals could be filled quite well without it. He had formerly been in the habit of filling the roots with antisepticised wool, but had for some time past impregnated it with thin oxychloride, and he thought with better results, and to judge from those obtained by others, he was strongly in favour of some non-absorbent material, and he knew of none better than Guillois's cement, as recommended by Mr. Stirling.

Mr. Mackintosh, in referring to what had been said by Mr. Amore, called attention to the February number of the *Dental Record*, in which it was stated that a few drops of hydrochlorate of cocaine in water, after being allowed to remain for a few minutes in the cavity of a tooth upon an exposed pulp, made it insensible, and allowed its removal without pain. In another case 8 drops of a solution of similar strength, when injected beneath the buccal mucous membrane in close proximity to the mental foramen, caused

anæsthesia of the lower lip molar canine and incisor teeth, and partial anæsthesia of the tongue on that side.

Mr. Rees Price decidedly could not agree with the author of the paper with respect to the non-extraction of a tooth in a state of acute periostitis, with impending suppuration. He had found marked relief in giving internally sulphide of calcium in cases of periostitis or tendency to alveolar abscess. He thought Mr. Stirling was too ready to cut away the buccal walls of teeth to get at the pulp cavity; it was more advisable to open up from the crown. Possibly the instruments used being made from stocking needles bent at different angles, and filed to a tapering point, had something to do with this, they seemed too brittle and not flexible enough. Donaldson's nerve bristles were preferable. He could not agree with Mr. Stirling in the necessity for leaving a pulp cavity intact for a month after the arsenic had done its work. Some pulps were difficult to extirpate even with two or three applications of arsenic, but if the pulp had been acted upon he found, as a rule, it could be removed in 48 hours, and the tooth filled permanently, with little or no inconvenience to the patient. Mr. Watson had said that leaving arsenic upon an exposed pulp for a long time was likely to cause periostitis. He must dissent from this statement; for not unfrequently, from necessity, he had applied arsenic to exposed pulps, and finishing with a temporary stopping, he had not seen the patient for a long time. Mr. Coleman had suggested using arsenic as a dressing in dead teeth, under certain circumstances. He had tried this on many teeth—especially when it was not possible for the patient to give the time for prolonged treatment, and with satisfactory results.

The President closed the discussion by remarking that the subject had been so thoroughly wrought out by the previous speakers that there was nothing left to say. He quite agreed with Mr. Macgregor as to the very great value of leeching in acute periostitis.

As regarded the antiseptic powers of arsenious acid, he recollected having many years ago (when its use dentally was only beginning) seen it stated in an American journal that pulps devitalised by its means could never become putrid.

MESMERIC ANÆSTHESIA.

By MR. HAROLD MURRAY.

(*Concluded from page 201*)

So far, gentlemen, I have dealt with a time when no scientific attempt to investigate the cause or nature of these phenomena had been made. For I may say in passing that Collyer held the opinion that the lungs were the manufacturing organs of the body, inasmuch as he supposed that at every inspiration, the lungs sent electricity to the brain, the quantity or character of which was increased by the inhalation of stimulating or narcotic vapours. He published the following statement: "That the anæsthetic state is a nervous congestion of the brain, in contradistinction to an increased flow of blood to that organ;" while he describes the "nervovital power" as "electricity vitalized by assimilation in the lungs."

His method of operation was by steadily gazing at the eyes of his subjects; the conditions to be observed being, absolute quietude, and the passive state of mind in the subject, who was placed in a comfortable position; a subdued light; and, thirdly, the exercise of the will of the operator directed to the brain of the subject. You will see from this that he still held to the ideas of electricity and influence of will power, which I will endeavour to show, later on, are erroneous ones.

This brings us to 1841, a time when through the investigation and ability of a Manchester surgeon, the subject of mesmerism was first put upon a scientific and true basis. James Braid, M.R.C.S., Eng., C.M.W.S., after carefully going into the matter came to a conclusion respecting the subject, which has since, I believe, remained unaltered. Up to his time mesmerism had always had the odour of witchcraft, a supernaturalism about it. The prevalent beliefs about it being that a magnetic fluid, or special agency, or emanation of some unknown character, passed from the body of the operator to that of the subject. All this Braid looked upon as impossible, and indeed he was of opinion that mesmerism was another name for deception. But having one day seen some experiments performed by a M. La Fontaine,

he noticed that the patient was unable to raise his eyelids. Braid seems at once to have gone to the root of the matter, and by a few trials upon his personal friends during the ensuing days, proved to himself the correctness of his theories.

The conclusion that he came to, I will give you in his own words. It was that "the phenomena of mesmerism were to be accounted for on the principle of a derangement of the cerebro-spinal centres, and of the circulatory and respiratory and muscular systems induced by a fixed stare absolute repose of body, fixed attention, and suppressed respiration, concomitant with that fixity of attention. That the whole depended on the physical and psychical condition of the patient arising from the causes referred to, and not at all on the volition or passes of the operator throwing out a magnetic fluid, or exciting into activity some mystical universal fluid or medium.

His method was to secure in the patient or subject a continued double convergent and upward squint, by holding above the eyes and in the middle line at a distance of 8 to 15 inches, some bright object on which he directed the patient to keep both their eyes and their minds fixed. A restful position and the absence of interruption were also necessary.

When all these conditions were observed, he found he could induce on almost anyone the mesmeric sleep. Usually in 3 to 4 minutes the iris began to dilate and contract with a wavy motion, and shortly afterwards the eyelids would close with a slight vibratory quiver. If at this stage the limbs were extended by the operator they had a tendency to remain so, especially if the operator in a soft voice desired them to be retained in the position he placed them in. In fact a cataleptiform rigidity ensued, which was more or less marked according to the method followed by the operator. This catalepsy, strange to say, was immediately dispelled by blowing on the effected part with either bellows, or the mouth, or otherwise. I believe no satisfactory explanation of this fact is yet given. Braid never succeeded in procuring manifestations of the higher psychic phenomena of the mesmeric trance, such as the different qualities of clairvoyance, etc., but he claimed that by his method he

could produce with greater certainty, and among a larger class of subjects, an exalted state, followed by one of torpor, which in its turn was again followed by the unconscious but active condition of sleep-waking. Braid was the originator of the term hypnotism, which I will from this point use. His idea of the cause of these phenomena, that is, their being due to a physically induced disturbance of the cerebro-spinal centres, put so different a complexion upon the whole matter that he thought it necessary, and I think wisely, to designate it by a new name, nervous-sleep, neurhypnology.

There is no sudden transition from any one of the three hypnotic conditions which I have named, to another, they are merged gradually into each other, but each presents different characteristics. In all the sensation of pain is dulled or absent; tactile sensation is not effected in this way, but is on the contrary, in some instances, exalted to an almost incredible degree.

Independent volition seems equally absent in all three stages; hearing is unimpaired, and the patient does whatever he is bidden. One thing which it is important to note is that it is impossible to hypnotize a patient by Braid's method against his desire; that is, one cannot induce the hypnotic condition unless the patient concentrates his thoughts and fixes his vision. It has since been found that visual fixation is not the only means by which the hypnotic condition can be brought about.

In sensitives, that is, subjects who have been many times hypnotized and are in this way predisposed, the ticking of a watch, if the attention is concentrated upon it, will bring about the same psychic condition. Indeed in such subjects, concentration of thought or the remembrance of past experience and the experiences of their recurrence is sufficient.

I purposely exclude from my paper all mention of the medical use of hypnotism, except to say that it has been so used to a very much larger extent than for any other end.

I will now direct your attention to the operations performed by James Esdaile, M.D., in India. These attracted so much attention that in 1845 the Deputy Governor of Bengal ap-

pointed a committee to witness and report on them. It was composed of Dr. Atkinson, Inspector General of Hospitals, Dr. O'Shaughnessy, Dr. Stewart, Presidency Surgeon, and other eminent men. They reported that Dr. Esdaile had succeeded in producing a completely anæsthetic state in even the most severe and protracted operations. Three of these I will particularize : 1st. Amputation of the thigh, by the double flap operation. Seven arteries were secured and tied. Duration 15 minutes.

2nd. Hypertrophy of scrotum, a tumour weighing $16\frac{1}{4}$ lbs. was removed.

3rd. Scrotal tumour, in Hindoo 27 years of age. The tumour measured 7 feet in circumference, was as large as the body of a man, weighed, half-an-hour after removal 103 lbs.

In one case the patient was in so profound a stupor that Dr. Stewart thought he had drugged himself with Indian Hemp, and requested Dr. Esdaile to awaken him, in order that they might ascertain if this was the case. This was done and the patient was found not to be drugged.

As one true and authenticated case is as good as a hundred, I shall spare you the details of other 73 operations of Esdaile's, all performed during hypnotic trance, and painlessly as the committee before mentioned vouch.

These, with some other cases, in the hands of other surgeons, but all attested by equally credible witnesses, I have made a list of, which I will pass round.

RECORDED CASES OF OPERATIONS UNDER MESMERIC ANÆSTHESIA.

Esdaile's Cases (Indian Commission).

No.	Operation.
1	Amputation of arm.
1	Amputation of breast.
2	Amputation of penis.
2	Testicle extirpated for scirrhus.
1	Tumour in upper jaw excised.
3	Contracted knees straightened.
3	Contracted arms straightened.
3	Cataract.
1	Tumour in groin excised.
7	Hydrocele.
2	Dropsy.
1	Application of actual cautery.
2	Application of acid to sore.

- 7 Unhealthy sores pared down.
- 5 Abscess opened.
- 1 Sinus 6 inches long laid open.
- 1 Heel flayed.
- 1 Amputation of end of thumb.
- 3 Extraction of teeth.
- 1 Gum cut away.
- 3 Circumcision.
- 1 Piles.
- 5 Excision of toe nails.
- 1 Seton introduced from ankle to knee.
- 1 Tumour on leg excised.
- 14 Scrotal tumours.

73 Total.

- 1841 Extraction of two teeth for a young lady, by — Martin, Dentist, Portsmouth.

Extraction of eleven teeth and eleven stumps, at several sittings. patient a woman. Several other similar operations for other patients by — Prideaux, Surgeon, Southampton.

Extraction of several teeth ; an abscess behind left ear opened, and dossil of lint inserted ; patient a boy. Also large wart removed from back of a female's hand, by — Carstairs, Surgeon, Sheffield,

Division of tendons behind the knee in girl of 17, by Dr. Engledue. Southsea.

Operation for caries of alveolar process—gum divided on both sides of mouth, from incisors to molars and the bone laid bare and filed, by Dr. Charlton, Assistant Surgeon, Royal Marines.

- 1842 Amputation of thigh, in the District Hospital of Wellow, by Dr. W. Squire Ward, Wellow, Nottinghamshire.

A paper on this operation was read before the Royal Medical and Chirurgical Society.

It was my intention before I began to write this paper, to take up especially the scientific and physiological side of the question, but when I came to really look into the witness of such men as D. Hack Tuke, M.D., L.L.D., Dr. Carpenter, Edmund Gurney, M.A., and many others, and saw the magnitude of this aspect of the question, I was obliged to abandon the idea of dealing at all with it in so short a paper as this must of necessity be. As a means of producing anæsthesia, hypnotism is practically behind the other agents now in use, since many persons cannot be hypnotised. But it is an undeniable means, and for that reason deserves your consideration. In those surgical cases I have previously mentioned, as also in those on the list I have passed round, it seems to have worked in a manner nothing short of perfection, and in cases of extensive operations involving the mouth or nose, or both, we can well imagine its great advantages over the other agents in our hands, as in these cases the difficulty and some-

times the risk of the administration of chloroform is considerable. It is an absolutely safe anæsthetic; no death has ever occurred from its use.

I have taken the following particulars respecting the physiological phenomena of the hypnotic state, from a most interesting work on Sleep Walking and Hypnotism, by D. Hack Tuke, M.D., L.L.D. (published last year). The pupils, at first contracted, become dilated as the subject becomes hypnotised. They have been observed to be widely dilated and sluggish—an indication of functional activity of the medulla oblongata as regards the sympathetic.

The cerebral circulation is not anæmic, and fulness of the cerebral vessels is not inconsistent with hypnotism, since persons have been hypnotised after having inhaled amyl nitrite.

Respiration and circulation are usually much accelerated at first, but though the number of pulse beats is greater than normal, there is no change in their character. Mr. Tuke used, I believe, both the sphygmograph, the pneumograph, and the myograph, in his investigations, and he points out their applicability as detectors in cases of suspected shamming. Mr. Tuke's conclusion regarding the cerebral circulation I believe to be true, but it contradicts that to which Dr. Wm. Carpenter gave expression some years ago, namely, that:—"The mesmeric sleep corresponds precisely in character to what is known in medicine as hysteric coma, the insensibility being as profound while it lasts as in the coma of narcotic poisoning, or pressure on the brain, but coming on and passing off with such suddenness as to show that it is dependent on some transient condition of the sensorium, which with our present knowledge we may pretty certainly assign to a reduction in the supply of blood, caused by a sort of spasmodic contraction of the blood vessels.

This I think you will agree with me, is an hypothesis which is untenable in face of Mr. Tuke's amyl nitrite experiments.

As a very imperfect and rough definition one might say that "the basis of hypnotism is a complete alteration and re-balancing of the nervous system, artificially producable by special means of an obviously physical sort."

This definition does away with all possibility of the action of the so-called "will power" of the operator upon his subject, indeed there is no doubt that some persons are capable of hypnotising themselves, thus demonstrating beyond doubt that the influence of an extraneous person is not at all indispensable. Still it is an argument which I am not at all prepared to support, since it would appear from some experiments lately performed by the Mesmeric Committee of the Society for Psychical Research, that some unnamed influence is exerted upon the patient by the hypnotist. This however is a matter purely psychic, and not within the boundary of the subject under our notice.

I have so far refrained from alluding to the number of people who are susceptible to hypnotism, nor have I, in any work I have consulted, been able to find any estimate given; probably the number is between 10 and 17 per cent. In one instance 20 out of 40 people were hypnotised, but in cases such as this the circumstances must be peculiarly favourable. There is no doubt that hysterical patients are particularly susceptible. Charcot and Richet, have at the Salpêtrière made a large number of experiments upon such patients.

They have found that any sudden shock, as for instance, that produced by a hit on a hidden gong, or a rapid and sudden flash of intense light directed on to the face, would hypnotise hysterical subjects, without their having any previous knowledge that any such effect was being sought for, or intended. Richet constantly induces the cataleptic state by such means, the patient being as it were instantaneously petrified in spite of whatever efforts he make to resist the influence.

To sum up, then, gentlemen, we find that a certain abnormal change of function in the nerve centres ensues, in a certain number of subjects, as the result of definite processes, mostly physical.

That these processes, if we exclude those used by Charcot and Richet upon hysterical subjects, consist of muscular strain, as advocated by Braid, in the double internal and upward squint, or of a rapidly successive impressions, or a continuously interrupted impression upon the auditory or optic

nerves, as instanced by continuously passing the extended fingers over the patient's eyes, or by the ticking of a watch. All of these being accompanied by monotony of impression and fixity of idea.

That again excepting the before-mentioned hysterical cases, expectancy on the part of the patient is a necessity.

That the difficulty of inducing the hypnotic state diminishes in accordance with the number of times it has been previously induced in the individual, until a state is reached when the objective physical means are no longer necessary, and the subject can hypnotise himself by the mere memory of past similar sensations.

That magnetism, animal, terrestrial or other, plays no part in the induction of hypnotism.

That there is no doubt that an abnormal condition of absolute insensibility to pain occurs in certain subjects capable of hypnotism.

That a large number of severe surgical and dental operations have been performed painlessly during this hypnotic anæsthesia, and that for operations involving the mouth, fauces, or nerves, such anæsthesia is peculiarly advantageous, but that since it is at present far from being universally applicable, hypnotism must be classed as behind chloroform, ether, etc., as a practical anæsthetic agent.

PROSECUTION UNDER THE DENTISTS' ACT.—In the Cupar Sheriff Court, on March 6th, Alexander Ross French, formerly a confectioner in Dundee, and now residing in St. Andrews, was charged with a contravention of the Dentists' Act, 1878. The libel set forth that the accused unlawfully used the title of "Dr." French, dental surgeon, by having the same on his door-plate, lamp, and signboard at his place of residence, and with unlawfully using the titles of "D.D.S." resident surgeon. "Dr." and "D.S." The accused pleaded not guilty. His defence was that he had advertised that he was "not a registered dentist," and he contended that the titles used by him did not come under the jurisdiction of British law. After evidence, the charge was found proven. and the Sheriff imposed a fine of £10, with the alternative of seven days' imprisonment.

Reflections from the Surgery.

THE CLINIC AT THE BALTIMORE COLLEGE OF DENTAL SURGERY.—EXPERIENCES WITH COCAINE.

By JOHN H. COYLE, Prof. Operative Dentistry and Dental Materia Medica, Baltimore College of Dental Surgery.

The following is an account of our clinic at the Baltimore College of Dental Surgery yesterday, with cocaine as a local anæsthetic, and as an obtunder of sensitive dentine. I propose to give you, as far as I can, a plain statement of what was done, and the results obtained. There were five patients operated upon in the clinic as follows:—

No. 1: This patient applies for the extraction of the left superior wisdom tooth, which on examination proved to be a dead tooth, the gum and surrounding tissues being in a healthy condition. The oleate of cocaine was applied all over the gum, on all sides of the tooth, by means of cotton wool wound on the point of an instrument, which was dipped into the fluid, and applied interruptedly for the space of ten minutes. The tooth was then grasped with the forceps, the beaks of which were pushed well up under the gum, forcing them entirely away from the tooth, when it was promptly removed from its socket. There was absolutely no pain felt in grasping the tooth, but on breaking the tooth from its attachment with alveolus there was considerable pain.

No. 2: This was a second bicuspid, left inferior and also dead, the surrounding gum in a normal condition. Ten drops of the muriate of cocaine was injected by means of the Hypodermic Syringe, immediately over the anterior mental foramen, which was in proximity to the root of this tooth, and at the same time, the gum was painted thoroughly with the same, and at the expiration of ten minutes the tooth was extracted with comparatively no pain. The anæsthetic effect being more pronounced on that side of the tooth where the injection was made. I will remark that at the expiration of twenty or thirty minutes after the extraction, the patient

complained of considerable pain, with the return of normal sensation in the parts.

No. 3 : This was a case of two roots, remains of the first left inferior molar. The oleate of cocaine was applied to gum for ten minutes and the anterior root was removed with little or no pain. The removal of the remaining root, however, caused considerable pain, notwithstanding a fresh application was made before attempting its removal. I believe this was the result of not being able to grasp the root with forceps and the elevator had to be resorted to.

No. 4 : A case of sensitive dentine in carious cavity on buccal surface of right inferior wisdom tooth. The oleate was thoroughly applied and after ten minutes I prepared this cavity for filling, using both the dental engine with burs and excavators by hand, without any pain whatever. In the afternoon this patient applied to a skilful dentist to have this cavity filled, the operator saw proper to make some further excavation, not using the cocaine, this was accomplished with great pain to the patient, thus proving conclusively the efficacy of the cocaine in this case.

No. 5 : Also a case of sensitive dentine from recession of gum on buccal surface of right inferior first molar. This was an extreme case, the slightest touch, even of the finger nail producing most acute pain. The oleate was thoroughly applied and the surface thoroughly burnished with some pain attending the operation. This is a plain statement of results obtained from the use of this drug in the manner indicated. While I am sceptical to the belief that total abrogation of pain can be obtained in the extraction of teeth, there is no doubting the fact established by the clinic that it does produce anæsthesia of the gum, and does in a large measure lessen the pain of extraction. It is certainly a valuable addition to the dental *Materia Medica*, and no dentist, in my opinion, can afford to remain ignorant of its anæsthetic and obtunding powers. I propose to follow up experiments in the direction of the hypodermic injection in the vicinity of the nerve supplying to part to be operated upon.

British Journal of Dental Science.

LONDON, MARCH 15, 1885.

MAL-PRAXIS AND ACTIONS FOR DAMAGES.

We have within a comparatively short space of time published accounts of actions brought by members of the laity against persons laying claim to skill in dentistry. The cases which have thus been brought before our readers have not by any means exhausted the roster.

It is matter of extreme regret that such miserable cases are so frequent, although we cannot fail to welcome their publication in one sense. For as case after case becomes ventilated the public must begin to discern that "there are dentists and dentists." They will appreciate the fact that a truly skilful operator needs no advertisement save what his nimble fingers and clear reputation can offer. In common justice it must be said that the *soi-disant* dentist is not always in the wrong. There sometimes arise cases of trumped up charges, promoted simply with a view of either damaging a respectable practitioner, or to avoid the payment of a lawful and just claim. No man is free from becoming the victim of such a scandalous practice and so no man can be too rigidly particular alike in his demeanour towards his patients or in his pecuniary transactions with them. "No play, no pay," is a tacitly accepted rule among players and there is a marked tendency in favour of its extension to non-theatrical centres. A patient is discontented with the work done in his mouth. His denture does not give him the maximum of comfort in the minimum of time and at once he considers himself justified in repudiating his indebtedness to the dentist.

Another point in such cases is, that we so often hear that the discontented patient leaves the dentist whose skill he had laid heavily under contribution, and upon whose time he has encroached and visits a rival practitioner. A little discrimination, *esprit de corps* would here set matters right, but it only too frequently happens that matters are set altogether

wrong. The dentist to whom appeal is made, jumps to the conclusion that the previous treatment has been all wrong, nor does he hesitate to say so. It might be easy enough to pour oil upon the waters, but this is not the way many practitioners act. We think this is a great pity. There is a vast difference between uncloaking impudent charlatanism and fouling the reputation of a brother practitioner, because, it may be, his efforts have ended in failure. Probably the whole case may have changed since it first came under his hands, so that strictures passed by the second opinion are as inaccurate as they are uncharitable, being as it were, passed upon antecedent conditions, only learned from biassed verbal witnesses. Even in these days, when professional competition is so keen and a livelihood is so toilsomely achieved, it is distinctly bad policy for brother practitioners to be ready to attack rather than back up one the other. In union is strength. If the profession would only become unanimous upon two subjects, the one being to stamp out advertising quacks and imposters, the other, to cling together, to speak well of one another, especially with patients, and when they cannot quite acquiesce in any given line of treatment, to preserve as far as may be reticence. We all know, how easy it is for a quack to get off, but we also know that medical men, and why not dentists, have been convicted of the most hideous crimes upon the most slender information.

The case of the hapless Dr. Bradley will point the accuracy of this statement. Dr. Bradley was convicted of a most grave offence upon the evidence of a known epileptic. Dentists remain closeted sometimes for a considerable period of time with their patient, and even the most circumspect thus run fearful risks, as charges are easily preferred but rebutted with the utmost difficulty. It is the practice of some dentists to administer nitrous oxide gas single handed, and then extract. Such a course is open to the utmost censure, alike on behalf of the patient and the operator. In cases in which skilled evidence is called in support of a claim advanced for mal-praxis, the course of the witness is by no means a clear one. Of course, it will be said that what he has to do is to tell the whole truth and nothing but the truth.

Granted that this is so, there yet remains the *manner* in which that truth is told. We do more damning by faint praise than by scurrilous abuse. And, sad as it is, there is a distinct inclination among many dentists to depreciate the work and professional status of others. This is a vast mistake, as in the long run it not only lessens the esteem of the public for a brother professional, but it casts a slur upon the whole profession. We may go a step further, and say that even this crier of stinking fish will not in the end gain either in reputation or professional esteem. Probably the incertitude of the present rate of fees leads to many actions for mal-praxis. A section of society cannot disabuse their minds from a hankering after "cheap dentistry," and they get it with interest. Were a more happy relation to be fostered between the dentist and his patients much of this would cease and the true social and professional position in society of the dentist would be determined.

JAPANESE DENTISTRY.—A Correspondent favour us with the following information: The Japanese dentist does not frighten his patient with an array of steel instruments. All of his operations in tooth-drawing are performed by the thumb and forefinger of one hand. The skill necessary to do this is only acquired after long practice, but once it is obtained the operator is able to extract half-a-dozen teeth in about 30 seconds without once removing his fingers from the patient's mouth. The dentist's education commences with the pulling out of pegs which have been pressed into soft wood; it ends with the drawing of hard pegs which have been driven into an oak plank with a mallet. A writer in the *Union Medicale* says that no human jaw can resist the delicate but powerful manipulation of the Japanese dentist.

RHIGOLENE AS AN ANÆSTHETIC IS AN HYDRIDE OF AMYL.—Dr. B. Ward Richardson, who has studied these compounds very closely, has recently offered his experience of Rhigolene. It has a pleasant taste, and is free from irritating properties when inhaled. It is mixable with ether, and in this form Dr. Richardson recommends its use as a local

anæsthetic. It is then employed as a spray for an apparatus similar to that used for ether spray. Rhigolene is, however, difficult to manage by itself, as its action is so rapid that the cuticle becomes frozen into a hard parchment-like sheet, which, being a non-conductor, fails to allow the Rhigolene to benumb the deeper tissues, hence Rhigolene alone is of little use in dentistry.

A COMPOUND ANÆSTHETIC ETHER has been invented therefore to meet this drawback, being composed of equal parts of rhigolene and anhydrous ether. It answers well, although it must be confessed that some patients regard the pain of the freezing, and even more of the thawing, as worse than the disease their use was invoked to cure. Rhigolene dissolves iodine and gr. v. to 3j forms a good local application. When the rhigolene has evaporated it leaves the iodine in a finely divided state.

THE *Chemist and Druggist* suggests that rhigolene may be employed as an antiseptic. It suggests the employment of a strong solution of ammonia shaken up with rhigolene, and using the ammoniacal solution after decanting the aqueous solution.

MENDING RUBBER PLATES does not, according to *Items of Interest*, require dovetails or holes to be first made to hold the new to the old. Neither is "waxing" up, &c., of any use. Suppose we have a plate broken quite in two. Adhere the two pieces with wax on the polished surface and imbed all but the part to be mended in plaster. Now scrape away all the rubber along the course of the break, so that the sides will be quite beveled. Now make your plaster quite warm, and taking a hot burnisher or knife blade press on pieces of rubber till the amount of the old taken away is restored. The first piece put on should be spread thoroughly. Place in position the other half of your flask and fill with plaster. When vulcanized you will find your piece as strong as when it was new. Suppose a block of teeth has been broken. File away the rubber behind the old block to a thin edge. Fit the

new block to its place ; then removing it spread on the old rubber with a hot knife sufficient new to fill its place, seeing that it is snugly packed around the pins, and vulcanize.

A LATHE "DRIP."—Corundrum wheels are difficult to keep wet.—Mr. Morsman, writing to the *Cosmos*, finds a Squibb ether-can with soldered to it, near the bottom, a tin tube, about one-quarter of an inch in diameter. Then this is to be perforated by the tube with an old excavator, pointed so as to make a hole about the size of a pin. The tube is to be filled lightly with absorbent cotton or sponge, allowing it to protrude so as to rub against the stone; then the can, filled with water and corked, it is complete. When it is tightly corked there will be no flow; loosen the cork and the water will flow, much or little, as you desire. It works very well, and it is always ready for use. Of course, the appliance should have legs to raise it to the proper height.

Abstracts of British & Foreign Journals.

THE INDEPENDENT PRACTITIONER.

PRACTICAL EXPERIENCE IN THE USE OF "OXY-PHOSPHATE CEMENTS.

By Dr. W. D. MILLER, Berlin.

In 1879, Dr. Miller found the oxy-phosphates as a filing material extensively used by German dentists. He found it possessed superior hardness and apparent greater durability. An additional advantage was that it could be had in various shades of colour.

Dr. Miller instituted experiments to determine the comparative solubility of the new material and the older oxy-chlorides in various solvents which were likely to be found in the human mouth. He bored holes, all of the same size, in strips of hard wood or ivory, filled them with the various cements to be tested, and immersed the strips in solutions of various organic acids, also in mixtures of saliva and bread, saliva and sugar, etc., etc.

In all cases the oxy-phosphates, Poulson, Wolff, Lorenz, Rostaigne, etc., withstood the action of the solvent about equally well, and far better than any of the oxy-chlorides. Observations upon patients corroborate these experiments.

These experiments induced Dr. Miller to use the oxy-phosphates in his practice. Experience shows, however, the oxy-phosphates are the most unreliable and treacherous. Sometimes fillings are constantly kept clean even for years; while, perhaps, in the very next mouth that we examine, we will find fillings which were inserted only a few weeks previous, crumbling to pieces.

Dr. Miller now believes that the fault lies, in part, with the material. Under favourable conditions it *may* in some mouths last four or five years, or even longer. The filling should always be examined a few days after insertion, to see if it has hardened, and the prognosis should be guarded. In extensive cavities, on the approximal surfaces of bicuspid and molars nearing the pulp, oxy-phosphate although apparently especially indicated, has proved a failure, unless employed as a temporary filling.

A filling of oxy-phosphate made cautiously on the approximal surface of a bicuspid, tooth very soft, decayed under the gum, and pulp nearly exposed, the patient soon returns with an aching tooth, a large cavity under the margin of the gum, and an exposed, inflamed pulp, are found. In such cases cement is bad, even for temporary filling, unless the neck of the tooth is protected by a layer of gutta percha. This results from secondary caries, since the oxy-phosphate is not antiseptic. The concavity also produced by the dissolution of the cement, and its roughened surface retains particles of food; oxy-phosphates may also contain substances favourable to micro-organisms of decay.

Dr. Miller only uses oxy-phosphate when patients dislike the look of gold; or occasionally, for temporary teeth and for setting pivot teeth. He also finds they fail as a capping for exposed pulps.

When decayed or softened dentine must be left in the cavity, oxy-phosphates should be avoided, as the moisture in the dentine prevents the thorough adaptation of the cement.

to the tooth structure, and secondary caries may ensue. For all such cases (incisors and anterior surface of cuspids excepted) Dr. Miller finds a filling of tin and gold preferable.

Dr. Miller admits that oxy-phosphates, if properly hardened, will resist the action of buccal fluids better than other cements, but it is very difficult to get them to so harden.

ARCHIVES OF DENTISTRY.

THE EFFECT OF SUGARS AND THEIR COMPOUNDS ON THE TEETH.*

By E. B. HITCHCOCK, M.D., D.M.D.

Sugar is defined as being a remarkable substance in the juices and sap of plants which placed in contact with the organ of taste produces a sweet sensation.

The human organism is capable of producing sugar, being secreted by the liver. Acids disturb the molecular arrangement of sugar most readily, and form from it a variety of new substances. Heat decomposes it, producing charcoal. Sugar is largely made up of black carbon.

Succrose occurs in sugar-cane, beets and parsnips; a second glucose results from the action of a starch with acid. A third the sweet matter of all kinds of fruit the writer calls fructose. A fourth is found in certain fungi. A fifth in manna.

The process of the manufacture of sugar is then entered into in detail.

Raw sugar contains a great number of an insect the *acarus sacchari*, which on being introduced into the stomach must impair health. They are not found in refined sugar.

Simply eating or dissolving a lump of sugar in the mouth is harmful, as it acts locally, mingles with the saliva, lodges between and in the cavities of the teeth where it soon decomposes and becomes an acid in nature itself, and certainly the tooth if carious, begins aching.

It also acts upon the general system. It upsets the stomach, causing its secretions to become excessively acid, leaves a disagreeable sweetish taste in the mouth, with bad breath,

*Read before the Massachusetts Dental Society, Dec. 12th, 1884.

retarded digestion and constipation. The secretions are also changed; these symptoms may induce the consumer, especially if a child, to become sick and confined to bed. If continued the whole system becomes impaired and the resistant force diminished.

Constipation has a decidedly bad effect on the oral cavity, the teeth being far more likely to decay. In many diseases in which constipation is a symptom, we find more caries of the teeth than in another disease equally severe, but in which the bowels are open. In forty cases of cancer of the uterus it was found the teeth were badly effected in all but one, and that one had a diarrhoea every alternate day.

The fermentation of sugar may be either lactic or butyric; the first is accomplished by a division of the sugar into two equivalents of lactic acid.

The altering action of the sugar on the dental tissues, carries the fermentation still further and changes the butyric acid into some of its derivations, proprionic and valerianic acids. These are destructive to the teeth.

Magitot maintains that sugars are responsible for the frequent cases of caries of the temporary teeth in children allowed immoderate quantities of sugars. This fact is of still greater importance to the child at the time of the eruption of the first teeth, as the teeth are then softer and have less resistant power, and if these are attacked prematurely by caries, it can be generally traced to sugar or honey used either with or in the place of milk.

Nearly one-half of our food consists of starchy materials, and these are changed into sugar in the process of digestion. Even the saliva itself will very quickly convert these starchy materials into glucose, and in most mouths only a few minutes are required to effect this change. In the case of a child, where the time was accurately observed, only a half minute was required. According to Prof. Mayr, sugar will dissolve carbonated and hydrated phosphate of lime. A mixture of 68 grams of saliva, one of bread, five of meat, and five of syrup, kept at the normal temperature of the body for 48 hours, generated more than enough acid to decalcify the entire crown of a molar."

In some persons simply the presence of sugar in the saliva as in diabetes, causes the teeth to be set on edge and even real pain exists such as is produced by acids.

All candies contain sugar combined with other materials. Molasses, candy, toffy, chocolate creams, all contain harmful quantities of sugar.

In the confectioner's candy we have the sugar mixed with glucose, artificial flavourings being employed, most of which are injurious and even poisonous.

Apple oil is made by distilling fusel oil with sulphuric acid and bichromate of potassa.

Pine apple by distilling butyrate of potassa with alcohol and sulphuric acid.

Oil of almonds consists of dilute hydrocyanic acid.

Quince, nitric acid, and oil of rue.

Jargonelle pear, one part fusel oil, two acetate of potassa, one concentrated sulphuric acid.

Acetate of amylic ether with butyric acid forms banana flavouring.

The strawberry, raspberry, apricot, black currant, mulberry, and other essences are mixtures of ethyl and amycil ethers, modified by the addition of pure nitrous ether, orris root, vanilla, volatile oils, etc.

On the direct action of sugar, he cites Magitot, who found a solution of one part cane sugar and three of water gave after two years:—The liquid was reddish in colour and covered with a thick layer of mould; it was acid, with a faint odour, its thick and syrupy character persisted. Teeth placed in this solution were completely softened and black in colour, the roots having a gelatinous consistency; the enamel was as friable as chalk, and when detached at several points, showed the dentine beneath it to have undergone the same degree of alteration as the roots.

Teeth protected by a coating of sealing wax, leaving an exposed point, showed at this exposure an alteration identical with the preceding, and when thus localised, has produced a cavity, having all the characteristics of caries. The edges of the enamel are soft and friable, and the bottom soft and black. On the addition of creasote the action of the sugar was prevented, and no changes produced in the teeth.

A 1 to 3 solution of cane sugar in distilled water was boiled, and some sound teeth placed therein. The teeth were weighed and kept in a flask hermetically sealed for two years.

After removal the teeth were found in a state of perfect integrity, and weighed the same as before immersion. The teeth in these experiments were sound. Hence, unless changes take place in the sugars they have no direct deleterious effect, but almost invariably there is a change. The presence of any albuminoid substance acts as a ferment on the sugars, producing a change favourable to caries. If sugar or candy comes in contact with carious teeth, there is a decidedly uncomfortable feeling produced, varying according to the extent of the caries, the condition of the saliva, etc. To explain the cause of this pain the writer undertook some experiments.

Caries slightly acid, parotid saliva slightly acid, powdered sugar added, no effect, little saliva added, and in two minutes a decided aching which bicarbonate soda did not stop. Then the same tested with sodium chloride which has a decided affinity for moisture, no pain.

Another, parotid saliva slightly acid, caries acid, sugar dry, no ache; saliva added and in two minutes cavity tested again and found increased acidity.

Another, parotid saliva acid, caries acid, dry sugar added no ache; but a decided acid reaction in cavity.

Another, parotid saliva very slightly acid; cavity slightly acid, sugar added, no ache, but increased acid reaction.

Another, cavity acid, sugar added with saliva, and in one and a half minutes ache, bicarbonate soda, added; the ache stopped.

Another, slightly acid cavity badly decayed, dried sugar added, no pain.

Another, a deciduous tooth slightly acid, sugar added, pain, bicarbonate soda, added, pain stopped. Sodium chloride, added, no pain.

The proportion of pain in cases at the infirmaries was decidedly less than those in private practice.

Now as to the cause of pain, he thinks that if it were the absorption, the pain would be produced at once and without

the presence of the saliva. Absolute alcohol and sodium chloride have the same effect, though to a less degree. In most of these cases when moist caries existed, there was a decided change in the amount of the acid reaction and this was not caused by the saliva, as that was tested.

The writer believes sugars and candies ought to be excluded from the dietary but yet thinks in moderation they do not do much harm.

Literary Notices and Selections.

GOLD CROWNS.

By C. S. CASE, D.D.S., M.D., Jackson, Mich.

At the meeting of the Michigan State Dental Association in 1882, I attempted to explain a method I had long employed of making and adjusting the so-called "gold crown," a method that I believe will enable the dentist to do this work in less time, with greater accuracy, and more artistic results than can be obtained by the Richmond method, which is still employed by a majority of the dental profession.

The plan I shall explain requires so little time comparatively at the chair, that it will recommend itself to those operators whose time is valuable, because it admits of leaving most of the work to a skilled assistant, or the doing of it by the dentist in the evening.

The mechanical preparation of the root should be the same, in my opinion, as for any crown (excepting the Büttner) that is intended for a ferrule to telescope over it—i. e., after the gum has been separated from its attachments to the root, all that portion which is intended to be received within the ferrule should be made in the form of a straight tenon, having parallel sides. For that purpose I use a short, sharp, sickle-shaped scaler, drawn so as to take an oblique direction along the side of the root.

The importance of entirely removing the dovetailed shape of the root cannot be overrated, and I think the neglect of it is one of the principal causes of failure, for, if the crown

is made to pass over the enlarged end, it must needs leave a space beyond, between it and the root, that is difficult if not impossible to close by the most thorough burnishing. This space soon fills with decomposed blood, serum, and broken-down tissue, causing subsequent disease, which must proportionately impair the perfection of the operation. It is not necessary to shape the end of the root flush with the margin of the gum, as is commonly the practice, in order to remove as far as possible the enlargement of the natural crown, because all that can be left gives additional strength to the new crown, and is often sufficient without the aid of screws or other appliances. It is not a difficult matter to remove the enamel and a peripheral portion of the dentine, with sharp sickles, side-cutting hoes, and discs. In fact, it is not an uncommon practice with me (and doubtless that of others) to telescope a hollow gold crown over a tooth that has become too much disintegrated to fill, but still has a normal pulp.

After the root has been prepared, I prefer to obtain not only a measurement—the usual method—but an *exact pattern* of it, and dismiss the patient to continue the work at my leisure in the laboratory ; so that at the next sitting I shall have a tube that will *at once* pass over the root and *fit into all its irregularities*, with no need for alteration.

Around the prepared root pass a piece of fine, soft, or annealed wire. Surgeons' silver suture wire is best, because it retains whatever shape is given it without the slightest recoil. Carry the loop beneath the margin of the gum, on the palatal or lingual side, with a pair of gold carriers, the same as you would a silk ligature when putting on the rubber-dam. Now twist the ends together on the labial side with a pair of pliers, and burnish the wire into conformity with the irregularities of the root. Before removing the loop it should be so marked that it will indicate the relative position it took in the mouth. This can best be done by turning up the free ends of the wire. Then its removal from the root should be accomplished with the greatest possible care, so as not to disturb its peculiar shape. If this cannot be done with comparative ease, it will indicate an enlargement at the base of the root, that must be removed before

proceeding further. Having obtained a perfect pattern of the root, I dismiss the patient, and when opportunity offers I cut a form on the end of a piece of hickory, that will pass through the wire loop so as to exactly touch its inside circumference, and yet not to disturb its original shape. To guard against this the following plan has been suggested: Warm a strip of base-plate wax; place it within the wire loop, and with a hot wax-knife cover the inner half of the wire, and then invest in plaster, which, when hard and the wax is removed, so it be trimmed top and bottom flaring from the loop. This will facilitate the shaping of the hickory form and prevent disturbance of the guide-loop, which should always be near the bottom or cervical aspect of the plaster shell. In my practice I have not found this necessary, as I can shape the wooden form as soon as I could make the matrix, and preserve the shape of a loop of large or medium-sized silver suture wire with little difficulty. I hold the loop carefully against the stick, and with a sharp pencil outline its inside circumference. I then cut rapidly down to this with a coarse file, and finish with a fine one, being careful whenever the loop is tried to use no force.

A strip of gold plate should now be cut long enough to reach around the form, and wider than the length of the desired crown; the approximating edges bevelled and drawn together by a loop of annealed iron wire; then removed from the form and soldered. If it is desired that the body of the crown shall be larger than at the cervical portion, the strip of gold plate should be cut crowning, so that when passed around the form it will flare from it, touching only at the part that is intended to fit the root. After soldering, the ferrule should be again returned to the form and more perfectly fitted, and the edge that is to pass beneath the gum made thin, polished and shaped, so as to conform to the shape of the border of the alveolus. If the work has been done carefully, this ferrule will telescope perfectly over the root. It should now be forced to the position it is intended to occupy when finished, and an impression taken in plaster of it and the adjoining teeth. If the ferrule does not come away with the plaster, remove it from the root, and place in position in

the impression. Before dismissing the patient for the second time, secure a perfect "bite" of the place in wax.

A model in plaster from the impression obtained will show the ferrule in the same relative position it occupied in the mouth. Draw a line across it even with the cusps of the adjoining teeth; remove from the model, adjust the wax "bite," and make a plaster articulation. By the aid of this, make a model of the crown in wax, or modelling compound, to be used as a guide in shaping cusps upon the end of the wooden form. After which the shoulder should be filed back, so that the ferrule when adjusted to the form will stop at a place that will give the proper length to the crown, when the free end of the ferrule is turned down to form the cusps, as will be described. The guide to this will be the mark that has been made upon the ferrule, before removing it from the plaster model, to be governed *always* by the wax model of the crown. That is, the articulating teeth may strike into the space in such a way as to preclude making the buccal cusps even with those of the adjoining teeth. In forming the cusps, cut V-shaped pieces from the projecting end of the ferrule, and turn down one lap at a time, fitting the edges in turn with hammer and file.

To facilitate soldering, a thin piece of platinum can be easily fitted over the wooden cusps within the crown, and the whole invested in plaster and asbestos, so that the platinum lining is crowded to place, and only that portion of the crown exposed that is to be soldered. After soldering, replace the crown upon the plaster model, and correct any deviation from a perfect articulation. Finish and polish upon the wooden form. When this is inserted upon the root in the mouth, I think one can reasonably expect that no other change will be necessary.

Before final adjustment, a small hole should be drilled through the articulating portion of the crown, for the escape of surplus cement; the hole to be subsequently filled with gold foil. With the root already in a healthy condition, one has occupied at the chair not more than two hours of time, as follows: one hour at the first sitting to prepare root and obtain pattern; one half-hour at the second sitting, to adjust

the ferrule and take the impression and "bite;" and one half hour at the third sitting, to adjust the crown; and this is made possible by the fact that everything has been fitted outside the mouth.—*Dental Cosmos*.

SOME OBSERVATIONS ON ANÆSTHETICS FROM A CHEMICAL AND PHYSIOLOGICAL POINT OF VIEW.

By HENRY LEFFMANN, M.D., D.D.S., Professor of Chemistry and Metallurgy at Pennsylvania College of Dental Surgery.*

Anæsthesia is the most precious gift of science to man. The elixir of life and the fountain of eternal youth will never be discovered, but the diminution of suffering is fortunately attainable. It has been well said that in the days before the introduction of anæsthetics "surgery was agony."

Very few of the now living surgeons can realize other than in imagination the scenes of the operating room fifty years ago, or contrast the spectacle of a patient bound to the operating table, conscious of every movement of knife or forceps, or of ligations, with the present method, under which the patient tranquilly sleeps, even during the most formidable operations known to surgery.

The number of substances that have been proposed, and more or less used, for the production of general anæsthesia is quite large, and, doubtless, if there were a great necessity for a variety of agents—definite promise of superior advantage in further research—the number could be vastly increased. Until a very recent period the method of producing anæsthesia was by inhalation, but we have now the process of administration by the rectum, and although perhaps objectionable and even dangerous, yet the results obtained show that the effects of the anæsthetic are due to its absorption into the blood, and not to mere influence on the respiratory tract. Leaving out of consideration nitrous oxide and carbonic acid (the latter having been proposed but never regularly used), the general anæsthetics consist of volatile liquids,

*A Paper read before the Odontological Society of Pennsylvania.

derivatives of the hydro-carbons, particularly of those low in the series. Many of the compounds of this series are unsuitable, either on account of their slowness of action, disagreeable properties, difficulty of preparation, or other incidental causes. The experience of the surgeons of this country has been practically limited to three substances—ethyl oxide, commonly called ether; trichlormethane commonly called chloroform; and ethyl bromide. In their physiological action these bodies are all cardiac depressants, chloroform being the most so. The continuation of life requires the maintenance of the heart, lungs, and central nervous system. Anæsthetics attack all three points, depressing the heart power, disturbing the osmotic processes of respiration, and, by poisoning the blood current, affecting the brain. Yet, notwithstanding this, when used cautiously they may be safely employed. Chloroform is undoubtedly the most energetic of the three. Nothing is more regretful in the history of our profession than the deaths from chloroform administered by dentists. Too much stress cannot be laid on the fact that the heart power is so seriously reduced by this anæsthetic that it is incapable of supplying the brain properly unless the patient is entirely recumbent. We know, of course, nothing about the intimate action of these agents, and the relative danger is only, therefore, a matter of clinical experience; and upon this topic much difference of opinion prevails. In this city, for instance, are surgeons who rarely use ether, and those who never use chloroform. We may get a suggestion concerning the physiological anæsthetics from facts recently derived with regard to intoxicating agents, which are somewhat analogous bodies. It is well known, for instance, that the term alcohol, long restricted to the product of ordinary fermentation, has now acquired a generic meaning, and includes a large number of bodies, some closely resembling common alcohol, and others very different. Without stepping too far into the field of chemistry proper, I may recall to your minds the fact that there are several series of these alcohols, of the first and simplest of which, common alcohol is the second member. Each of these series consists of analogous bodies, presenting gradually increasing

complexity of structure, but never departing from a certain type. The chemist recognises in each alcohol an arrangement of atoms into a radicle characteristic of the alcohol and all its derivatives. The radicles and the alcohols which contain them may be arranged so as to show a regular increase of carbon atoms in the order of the natural numbers, one, two, etc. Now the researches of Richardson, Rabuteau, and others, have shown, I think, conclusively, that the physiological action increases in intensity and danger as the number of carbon atoms increase, so that while wood spirit (methyl alcohol) with but a single atom of carbon, is transient and slight in its effects, those of fusel oil (pentyl alcohol) which has five atoms of carbon, are prolonged and severe. It would be a mere speculation, but still I think not an unreasonable one, to suppose that a part of this difference is due to the lower osmotic power and greater difficulty of oxidation in the pentyl alcohol, these being the two methods by which the system gets rid of injurious matters. Much of the physiological action depends on the presence of particular radicles as Rabuteau claims to have shown and proved by the fact that two such bodies as pentyl formate and methyl valerate, which have the same composition, will produce when administered very different action, because one will produce in the blood the comparatively harmless methyl alcohol, and the other the harmful fusel oil.

Now it does not seem too violent to apply these facts to our common anæsthetics. Nitrous oxide is a substance as near to air in composition as any compound could be. It is highly diffusible, soluble in water, and, as experiment will easily show, capable of acting as a supporter of combustion. The functions of respiration and excretion are, therefore, not much taxed by it. It may subserve slightly the purpose of the air which it replaces in the lungs. Ether is a very different substance; its action is more specific, but it is highly combustible—as much so as alcohol—and it is therefore quickly and rapidly oxidized, and the result of such oxidation is simply carbonic acid products, to which the blood and lungs are accustomed. As the complexity of the hydro-carbon radicles increases the combustibility decreases, and hence the

greater difficulty that the blood has in getting rid of the substance. When, however, we introduce into these organic substances elements which are thoroughly foreign to the processes of nutrition, we get more severe results. Modern organic chemistry has given us extended lists of substances perfectly definite in character, analogous to the true organic bodies, but apparently not only incapable of forming a part of healthy tissues, but also inimical to life. We have, for instance, the substitutive compounds of chlorine, bromine, iodine, nitrogen-dioxide, arsenic, antimony, and mercury. One has only to recall the effect of chloral, iodoform, hydrogen arsenide, and nitro-glycerine, and contrast them with the original organic bodies from which they are derived, and to which they are related, to see how the new elements added have increased their toxic action. Here it seems to me we have a clue to the marked action of such anæsthetics as chloroform, methane dichloride, ethyl bromide, and carbon tetrachloride. Not only are these bodies difficult to break up (chloroform, for instance, will not yield its chlorine even to silver nitrate), but when broken up the halogen must either be set free or converted into an active form of combination. Observations as to the relative danger of anæsthetics of closely allied character, are not entirely reliable, but one of the most recent essays on the subject, treating of the bodies produced by the successive substitution of chlorine for hydrogen, ascribes the most dangerous and prolonged action to the one containing the most chlorine. The series is as follows:

CH_3Cl . Mono chlormethane.

CH_2Cl_2 . Dichlormethane or methane dichloride.

CH_3Cl . Chloroform.

CCl_4 . Carbon tetrachloride.

If the principle here advocated be correct—namely, that the danger of an anæsthetic will be directly as its slowness of oxidation and osmosis, and the presence in it of elements foreign to the typical organic bodies,—we will have indications as to the directions which our researches for new agents should take.

In the actual use of these agents, of course, the physiological action may be controlled by the manner of administration. I have already referred to the danger of using chloroform in the upright position. It is also important to notice that, unless proper care is taken, we may add the dangers of asphyxia to those of anæsthesia. A plentiful supply of air is imperatively necessary with chloroform, and the fact that air can be freely admitted without interfering with the effect is one of the reasons why chloroform is in favour. Æther on the other hand, will not act unless air be pretty well excluded. Many operators fail to get good results from æther, and give it up because, as they say, they cannot get the patient quiet. Most of those who use ether successfully are in the habit of keeping the towel or inhaler close to the patient's mouth, and by this means the preliminary stage is passed. Other surgeons prefer to use æther at first very lightly mixed with air, until the sensibility of the laryngeal mucous membrane is obtunded. In this way coughing is prevented. I have been under the influence of æther by both methods, and I must say I prefer the latter. The æther was given to me very successfully, and the recovery from the effect was rapid and perfect. By the other method I was so completely prostrated that it was several hours before I could leave the operating room, and I am sure (although I could not have believed it if any one else had told) that the odour of ether was perceptible to me in my own head for more than twenty-four hours after administration.

In relation to the condition of the kidney, especially in ether anæsthesia, it appears that in cases of marked kidney disease, particularly in the now too common Bright's disease, anæsthetics are more than usually dangerous. It appears that ether is especially obnoxious, and I have heard an experienced obstetrician say that he had abandoned its use in producing anæsthesia in labour, using chloroform entirely. I do not know that it is possible to explain the specific danger from ether in these cases, but it is probably connected with the manner in which the ether is excreted. At any rate, it is now considered proper surgery to test the urine before using any of the stronger anæsthetics.

The topics chosen for this paper are too intricate and extended for a single essay. I should like to consider the physiological nature of the analgesic effect of rapid respiration, but I think I have taken up sufficient time, and I would be very glad to hear from those present concerning the questions involved.—*Dental Cosmos*.

Dental News.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN

ORDINARY MONTHLY MEETING, Monday, February 2nd, 1885.

C. Spence Bate, F.R.S., President, in the chair.

The minutes of the previous meeting having been read and confirmed,

Mr. Arthur Pallant signed the Obligation Book, and was formally admitted to membership by the President.

The President announced that Mr. Herbert Stephen Parkinson, L.D.S., Eng., of 36, Sackville Street, W., had been duly nominated, and would be balloted for at a subsequent meeting.

Mr. Gordon Hooper, L.D.S., Eng., of 112, Harley Street, Cavendish Square, W. was balloted for and elected a Resident Member.

VOTE OF THANKS.

Mr. Chas. Vasey said he had very great pleasure in proposing a vote of thanks to the President for his very interesting address. There was only one point in it with regard to which he felt at all disposed to differ from Mr. Spence Bate; he doubted whether the President had not drawn rather too gloomy a picture of the state of the profession when the Society was founded. He (Mr. Vasey) was inclined to think that the evils of that day were due, not so much to a love of secrecy on the part of individual practitioners, as to the absence of all means of publicity.

However, as the President had shown, there had been since then a great advance in the science of the profession, and this had been owing, in no small degree, to the influence of the Society. And not only had both scientific and social progress taken place, but the constitution of the Society itself had been improved; it was to this that they owed the satisfaction of having Mr. Spence Bate as President, and they were very pleased that he had not found the long distance an obstacle to his acceptance of the office.

Mr. Thomas Underwood said he had great pleasure in seconding the proposal that a vote of thanks be given to the President for his address. He had listened with great interest to the exhaustive account which he had given of the history of the Society. The progress which had taken place in the operative department of dental surgery since the foundation of the Society was certainly very marked, and to this the Society had largely contributed. When it was started, English dentists were undoubtedly under great disadvantages in comparison with their fellow practitioners in America, and they had, unfortunately, no opportunities of improving themselves. Now he could confidently affirm that English dentistry could challenge the world.

The resolution having been carried with much applause, the President briefly expressed his acknowledgments. He hoped to be able to perform the duties of his office satisfactorily; at all events he would endeavour to do so to the best of his ability.

The Society then adjourned until March 2nd.

ODONTO-CHIRURGICAL SOCIETY OF SCOTLAND.

The fourth ordinary meeting of the session 1884-85 was held February 12th, 1885, at the Rooms, Chambers Street, Edinburgh. Andrew Wilson, Esq., L.D.S., President, in the chair.

The minutes of the previous meeting were read and approved.

Mr. James Graham Munro, L.D.S., Ed., Edinburgh, was balloted for and admitted as a member of the Society.

CASES OF INTEREST.

Mr. Rees Price showed a model of the upper jaw of a boy, aged 11. The two central incisors were half an inch in breadth. The laterals were in position, and the canines were coming through. One of the central incisors was chipped at the cutting edge, where it was very thin. It also showed a deep furrow on the lingual surface, giving the semblance of a union of two teeth.

The President exhibited the skull of a very young camel, showing the temporary dentition. The members, he said, would observe that neither upper nor under canines were caniniform, and that the lower one formed quite as much a continuance of the incisor group as did the corresponding tooth in the permanent series of the *Bovidæ*.

Mr. Macleod exhibited a lower incisor, to which was attached a very large deposit of tartar.

The next meeting of the Society, being the Annual one, will be held on the afternoon of Friday, the 13th March, and the Annual Dinner on the evening of the same day.

Correspondence.

[We do not hold ourselves responsible for the opinions expressed by our correspondents.]

To the Editor of "The British Journal of Dental Science."

SIR,—Can you or some of your numerous readers kindly inform me, to whom the Dental Profession is indebted for the invention and introduction of the Corundum Wheel?

I am, Sir,

Your obedient servant,

CURIO.

British Journal of Dental Science.

No. 414.

LONDON, APRIL 1, 1885.

VOL. XXIX.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

PRESIDENTIAL ADDRESS.

By C. SPENCE BATE, ESQ., F.R.S.

(Concluded from page 254.)

A year later we find the same author giving the Society the benefit of his observations in "Comparative Dental Pathology." He not only demonstrated the existence of odontomes, alveolar abscess, and constitutional disease in animals, but produced also the evidence of some inflammatory and ulcerative process in the original formative pulp of the tooth of a fossil horse. His communication also demonstrated the causes that induced defective palates, as shown by Professor Paul Albrecht, and his own reason for not accepting the duplicity of the centres of each incisive bone, and argues that "too great a protest cannot be raised against a practice now getting prevalent—of drawing conclusions as to morphology from pathological specimens."

While referring with pride to the tone and character of the papers on Dental Anatomy and Pathology that have been brought before this Society we cannot help noticing that the greatest advancement of knowledge has been made directly in the line for which the Society was formed, that is, in the progress of dental surgery. And it is a curious and remarkable fact that, with the exception of a paper by Mr. T. A. Rogers "On Capping the exposed Nerve," no communication on the treatment of the pulp with a view to the preservation of the tooth was brought before the Society until July, 1860, or nearly four years after it was formed.

Undoubtedly we had papers of interest to the dental surgeon in many forms:—"An Account of an Inverted Tooth and its Consequences," by Mr. Tomes; "The Reunion of Teeth with the Alveolus," by Mr. Woodhouse; "On Latera-

Pressure," by Mr. Bridgeman ; "On Appliances for Reducing Irregularities of the Teeth," by Mr. Ritchie ; "On inflammation as it appears in the Mouth, and its Treatment," by Mr. E. Sercombe ; and others of more or less importance, but all of value, as they conduced to build up the profession we follow, as the lumps of forgotten food the child devours go to form the man.

I said that it was nearly four years after the inauguration of this Society before the first communication on the treatment of the pulp after it had become inflamed, in order to preserve the tooth, was read. Nor is this a thing to be wondered at. Did I not say on commencement that we then knew but little, and that little we were afraid to communicate? Remember the state of dental surgery then.

The old key was struggling hard to retain its existence as a surgical instrument. It was only in 1846 that Mr. Tomes communicated to the *Medical Gazette* the character of the forceps that have since been in use. The discussion between microscopists as to whether the dentine was penetrated by a system of tubuli or supported by fibres was rather suspended by the early death of Mr. Nasmyth than set at rest by accurate demonstration, and could not be said to have been determined until Mr. Tomes published his communication in the *Philosophical Transactions of the Royal Society* in 1866. With this knowledge a new generation commences whose professional education gives them power to observe and courage to think.

In 1860 Mr. Belisario sent us from the antipodes his experience in performing the operations of Rhizodontology on teeth after the pulp had become inflamed and suppuration had been set up, with the valuable and important result that an examination made some months after by the cautious introduction of a drill into the cavity, "which came into contact with solid substance, without producing the slightest uneasiness on pressure," clearly indicated that the pulp had calcified.

This communication was shortly followed by one from Mr. Coleman "On the Method of Treating the Dental Pulp with a view to Produce Calcification."

His plan of treatment was the application of a strong solution of tannin in ether, and over this cotton and mastic. The result was, that in fourteen days from the commencement he cut away the tooth in the direction of the pulp cavity. "After removing a substance of the consistency of leather, and more resembling it than anything else, the outline of the pulp cavity was exposed, which was filled with a mass of fawn-coloured dentine, of a consistency somewhat harder than horn." He further adds, that the plan of treatment adopted is the one he almost universally pursues, as he believes that a tooth suddenly cut off from the supply of blood which enters it through its fang is also liable to become necrosed; he therefore deems it of great importance to preserve as much of the dental pulp as possible.

This was followed at the next meeting by a paper by Mr. Samuel Cartwright, giving his experience "On Disease and Treatment of the Pulp." For the reduction of inflammation he advocated a solution of tannin, and for the relief of pain where suppuration had intervened, he told us of the value of the process of Rhizodontrophy. "I have," he said, "within the last three or four months, treated numerous teeth in this manner, and in every instance relief within a short time has been afforded." But he further adds, "So many cases occur in practice, where from circumstances it is not possible to undertake a course of treatment which will secure a probably successful filling." "Under such circumstances the operation enables us to fill a tooth, with reasonable conviction that after-inflammatory action will not take place." And adds in a note, with the candour of a true man of science, "that he had afterwards an opportunity of seeing some of the cases that may be pronounced successful, though it cannot be said that the teeth were always comfortable."

We shortly find that Dr. Belisario advocates in the treatment of diseases of the pulp, particularly in those cases where suppuration had not supervened, and a certain amount of disorganised dentine existed, the use of Tr. Ferri Mur., sealing it in, and occasionally renewing it, and when the tenderness had subsided filling the tooth with gutta-percha and tannin.

and under ordinary circumstances, in from six weeks to three months, the disorganized tissue has become hardened, from a deposition of the salts of lime.

Shortly after, Mr. Thos. A. Rogers gave, under the title of "Fang-filling," his experience on the destruction and removal of the pulp, and advocated that the organ to be treated should be as largely exposed as possible, that the formula employed should be,—arsenious acid three parts, acetate of morphia two, and creosote sufficient to form a thick creamy paste ; a small portion of this paste should be taken on the point of an instrument and gently placed upon the exposed pulp so as to cover every part of it, and over it a gold cap should be placed, and secured by a temporary plug of wool and mastic, or wax, or osteo-cement. This he retained in position from forty-eight to ninety-six hours, according to the condition of person or tooth ; it then may be removed, and if the patient could not bear the operation immediately, he applied creosote daily from a week to a fortnight before removing the pulp, after which he treated the cavity daily until it was in a condition to receive a filling of gold foil. He illustrated his practice by describing seventeen cases, all of which were more or less successful excepting one.

Soon after this Mr. Woodhouse introduced to the Society the value of carbolic acid in its purer state, and a paper was read on the treatment of the pulp, with a view to its preservation by the means of this antiseptic, by Mr. James Bate, and another by Mr. Ashley Barrett, who thinks that "a great step has been made in dental pathology, now that we are able to assert with confidence that, wherever any signs of inflammation outside the tooth are present, they are caused by putrefaction going on within ; that a tooth is never tender on pressure or tapping without containing a putrefied pulp, and that a gumboil is evidence of chronic periodontitis, which latter is caused by an escape from the tooth of particles of decomposed nerve," his object being, he said, to advocate the utility of carbolic acid, in firstly preventing putrefaction of the dental pulp, after its being devitalised by arsenic, and secondly in arresting putrefaction of the dental pulp when once established, and so directly curing periodontitis. These asser-

tions of the author were canvassed in discussion, and afterwards considerably modified by him.

At the succeeding meeting Dr. Walker followed the subject with a communication "On Treatment and Extraction of the Tooth Pulp." His treatment was to dress the pulp with thoroughly levigated arsenic, creosote, and morphia, on cotton wool, and retaining it for twenty-four hours by a temporary stopping, when it should be removed and replaced by a plug of wool, the base of which should be saturated with a solution of mastic, and the apex tipped with fifteen granules of tannic acid and one tenth of a grain of acetate of morphia. When suppuration has set in, the cavity should be well sponged with solution of carbolic acid, and in forty-eight hours a barbed instrument may be inserted for the extirpation of the pulp, after which he forces creosote by means of a fine steel rod enveloped in wool, using it as the piston of a syringe, repeating the operation until the fluid passes through the sinus of the alveolar process at the apex of the fang, finally clearing the canal with wool and pure spirits; and in the course of discussion Dr. Walker attributed the power of extracting the pulp whole to the influence of the second dressing of tannic acid.

This was followed by a communication from Mr. G. D. Pollock, President of the Pathological Society of London, "On Alveolar Abscess dependent on Diseased Teeth," in which he gave a series of cases in which the eye, nose, antrum, or neck had become involved, with a carious tooth; and he came to the conclusion that in all instances of abscess or ulcer in the upper or lower maxillary regions, in certain cases of discharge from the nostrils, or in pains about the orbits with defective teeth in the jaws, it is always best at once to have recourse to their removal; acting on the principle that it is best to clear away any doubtful point in the treatment of a case before recourse is had to any other measures. This opinion being generally protested against by the members present, Mr. Pollock said that he looked at teeth merely as a surgeon, and did not think them of so much value as many of them apparently did, and that perhaps he should modify his practice a little, and have the teeth sometimes treated, instead of having them extracted.

In a communication "On Nervous Diseases connected with the Teeth," Dr. Lauder Brunton, F.R.S., after describing many instructive and interesting cases in which various forms of disease were cured by the direct treatment of the teeth, remarks that "affections of the intestinal track depending on dental irritation are of very considerable importance indeed." The close connection between the roots of the fifth nerve, and those of the vagus, can be demonstrated anatomically, and it is probably in consequence of this that irritation of the fifth is able to exert such a powerful influence upon the circulation:" and further continues, "We have now seen how affections of sensation, of motion, and of nutrition, may all be dependent upon dental irritation, but even the cerebral faculties themselves may also suffer from a similar cause," of which he gave several striking instances in corroboration of his assertion. And still more recently there is a paper by Mr. Power, Ophthalmic Surgeon at St. Bartholomew's Hospital, "On the Relations between Dental Lesions and Diseases of the Eye." In the course of this communication he says, "The influence of dental lesions on the accommodation has been particularly investigated by Dr. Herman Schmidt, of Berlin. This observer examined the eyes of ninety-two patients, who presented themselves at his clinic, suffering from some sort of dental disease—such, for example, as caries, periostitis, or neuralgia. Amongst the ninety-two cases Schmidt found there were only nineteen in which the range of accommodation was normal; in the remaining seventy-three cases the range was lowered, and in most instances considerably reduced."

"In regard to the locality of the dental lesion; in forty-one cases in which the upper maxilla was affected, paresis of accommodation was observed seventeen times. In thirty-nine cases in which the lower jaw was affected, the paresis was observed nineteen times. Disease of the teeth of the lower jaw, therefore, appeared to be somewhat more effective in producing failure of accommodation than that of the upper jaw." And he concludes, "I think it may be laid down as a maxim to be generally observed, that in all cases of threatening glaucoma, especially when this is associated with ciliary

neurosis and obscure pains in the temples and maxillary orbital regions—in all cases of mydriasis, and probably of myosis, originating without apparent causes—in all cases of sudden paralysis of either of the orbital muscles, or of loss of sensation in the absence of cerebral symptoms—in all cases of phlyctenular disease of the conjunctiva—in all ulcers of the cornea resisting ordinary treatment—in all cases of sudden failure of accommodation, especially in young children—and finally, in cases of exophthalmia, the condition of the teeth should at least be examined, and if faulty conditions present themselves, these should be rectified, and then one at least of the possible causes of each of these diseases will be removed.”

Time will not admit of our even mentioning one-half the work that has been done, or discussing such important subjects as the replantation and transplantation of teeth, which has been introduced to our notice by Mr. Woodhouse, Dr. Magitot, and Mr. Coleman, or more than to draw attention to such valuable contributions as those of Mr. Oakley Coles, “On the Production of Articulate Sound,” and of Dr. Langdon Down, late Resident Physician of Earlswood Asylum, “On the Relation of the Teeth and Mouth to Mental Diseases.”

To review the progress that has been made in the recent manner of introducing gold and other fillings, together with the use of the rubber dam, which has completely revolutionised our practice and operations, would require a chapter in itself even to record the work that has been done.

Our knowledge of dental caries has, through the researches of Messrs. Milles and Underwood, undergone an investigation that we sincerely trust will shortly lead to a conclusive demonstration of its true character.

Within the period of the Society's history anæsthetics have undergone considerable investigation, and if not for nothing else the value of this addition to surgical operations ought to make the name of dentist popular, the full advantage of which we may not be entitled to until we have discovered the means of obtunding pain in acutely sensitive dentine, which I trust the citrate of cocaine is about to bring us, a circumstance that will render our operations both more certain and less disagreeable.

In glancing through the several volumes of reports, I think that the Society has cause to congratulate itself upon the position that it has taken among the professional and scientific bodies.

That persons have come from the Continent of America and the Antipodes being students in our specialty is a favour that was not beyond the reach of our hopes, but when we find that men of world-wide renown, such as Professors Owen, Rolleston, Flower, and Murie, have sent us their researches on subjects relating to our studies, and that men like Power, Down, Brunton, Pollock, Hutchinson, and Richardson have made this Society the medium of their professional experience we feel that the Society has a duty to fulfil and a reputation to preserve, which, with your co-operation and assistance, I sincerely hope will be both upheld and advanced during the time I have the honour of presiding over it.

REFLEX FACIAL PARALYSIS *

By Mr. W. M. GABRIEL.

MR. CHAIRMAN AND GENTLEMEN,—My paper of this evening being rather over the usual length, I shall not occupy your time by any further introduction.

Facial paralysis is divided according to its causes into (1) paralysis from a lesion of the trunk simply, or of branches of the portio dura at some part of its course, generally as it passes through the petrous bone, and independent of cerebral disease. (2) Paralysis produced by a cerebral lesion—a cause which acts upon the nerve before it enters the internal auditory meatus, which form is usually accompanied by hemiplegia on the same side. (3) Reflex paralysis of the 7th nerve, consequent on a lesion of the 5th pair.

It is about the last class of cases that I propose speaking, but before proceeding further I shall briefly run over some points of the anatomy of the facial nerve.

The facial or portio dura of the 7th pair is the motor nerve of the face. It emerges from the lateral column of the spinal

* A paper read before the Students' Society of the Dental Hospital of London.

cord, as that column passes under the pons varolii, and enters the internal auditory meatus.

At the bottom of this meatus it enters the aqueductus Fallopii, and follows the windings of that canal to the lower surface of the skull, leaving the osseous canal of the temporal bone by the stylo-mastoid foramen. It is then continued forwards through the substance of the parotid gland, and divides in the gland behind the ramus of the inferior maxilla into two primary branches: the tempero-facial and the cervico-facial; from which numerous branches spread over the side of the head, face, and upper part of the neck, to supply the muscles of these parts, forming what is known as the "pes anserinus."

Within the temporal bone it is connected with the auditory nerve by filaments of union, and while in the aqueductus Fallopii it gives off three branches—the two superficial petrosal nerves, and the chorda tympani.

The greater superficial petrosal passes to Meckel's ganglion, and through this, supplies the levator palati and the azygosuvulæ muscles. The small superficial petrosal runs to the Otic ganglion, which supplies the tensor palati and tensor tympani muscles. The chorda tympani goes to join the gustatory branch of the 5th, and is in part distributed with it to the tongue, while another portion of its fibres enters the submaxillary ganglion, which presides over the functions of the submaxillary gland. A small branch besides these is also given off to supply the stapedius muscles.

Soon after its exit from the stylo-mastoid foramen, it gives off the posterior auricular, which supplies the retrahens aurem (sometimes also the attollens), and the posterior part of the occipito-frontalis; and also branches to the digastric stylo-hyoid and stylo-glossus muscles.

A point to be remembered is that the portio dura of the 7th pair is the only motor nerve of the buccinator for all its actions, whether of mastication or of expression, and that the 5th pair supplies it not with motor but with sensory fibres. The buccinator is interrupted in all its functions, whether of expression or of mastication when the portio dura is para-

lyzed; it is unaffected, and all its actions are preserved in motor paralysis of the 5th pair.

The threefold functions of the portio dura must also be recognised. Considered as a musculo-motor nerve, it contains within its common trunk the following sets of fibres subserving different functions: (1) Voluntary fibres by which the voluntary movements of the features are performed, and by which especially labial and buccal speech and some of the movements of mastication are accomplished. (2) Emotional fibres by which the features express the passions more or less involuntarily. (3) Reflex motor fibres which are involuntary for the act of winking, and for the movements of the nostrils in the acts of respiration.

These different sets of fibres are believed to derive their peculiar functions solely from the nature of their origin, and place of central connection in the brain and medulla oblongata.

In lesion of the nerve trunk in which all the fibres are equally liable to be affected, not only voluntary but emotional and also reflex motions will be suspended. But when the cause of the paralysis is cerebral, the origin or cause of certain sets of fibres may alone be involved by the lesion; while others may escape injury. The symptoms of central paralysis will vary with the special seat of the central lesion.

The voluntary and emotional actions (either or both) which have their origin in the cerebrum, will usually suffer while the fibres for reflex action which have their origin in the medulla oblongata, will be expected to retain their power.

The play of the features will be lost, and buccal and labial speech and mastication (so far as the buccinator is concerned) impaired; but the natural position of semiclosure and involuntary winking of the eyelids will be preserved.

Reflex facial paralysis, as far as I know, resembles that produced by a lesion of the trunk of the portio dura, *i. e.*, the orbicularis palpebrarum is paralyzed, and the eye cannot be properly closed.

I have neither seen nor heard of cases, the symptoms of which pointed to a central lesion as the cause.

The accession of facial paralysis (except in some cases of

central origin), is usually sudden, and is often discovered by the patient when he begins to eat. When food gets between the paralyzed cheek and the teeth, the cheek is instinctively squeezed or pressed upon by the hand in order to push the food between the teeth again. The difficulty in mastication only concerns the buccinator, and not the other muscles of mastication. The patient is soon and often abruptly told by the first kind friend who happens to meet him that his mouth is awry, and that it becomes considerably more so when he laughs. He then naturally wishes to see for himself, and on looking at his face in the looking glass he may verify the observation of his friend, and is then greatly frightened and alarmed by the discovery. The symptoms are indeed remarkable, and when the paralysis is unilateral and complete, immediately strike the eye.

The paralyzed side of the face appears smooth, flaccid, and motionless, without lines, wrinkles, or furrows. The eye is widely open and waters, the angle of the mouth is depressed on one side, is slightly open, and allows the saliva to escape. The whole mouth is drawn obliquely towards the healthy side, and the tip of the nose may be likewise affected.

When any movement of the face is attempted, the muscles of the sound side are alone brought into action; the patient laughs, weeps, speaks, and is angry only with the healthy side, the other remaining always immovable.

The face is distorted in the most peculiar way, because the paralyzed muscles yield to the traction of the healthy ones, and the more the patient strives to avoid grimaces, the more marked they become. No voluntary movements can be performed by the muscles innervated by the facial nerve, no frontal furrows, nor any corrugation of the eyebrow occur, the eyelid cannot be voluntarily closed. When, however, an attempt is made to close the lid, the upper eyelid falls to some extent, partly in consequence of its weight, and partly because the levator is relaxed. The globe is rolled upwards and rotated outwards or inwards, so that only the sclerotic appears between the gaping lids, the pupil being thus brought beneath the upper lid. The fissure of the lids, however, remains wide open in peripheral paralyzes (even during

sleep), which is an important symptom distinguishing them from facial paralyses of cerebral origin, in which the branches distributed to the orbicularis palpebrarum are not paralyzed. This inability to close the eye, and especially the coincident paralyses of Horner's muscle, interferes with the entrance of tears into the lachrymal canal, and they continue to overflow upon the cheeks. The imperfect closure of the lids also renders the removal of particles of dust from the eye impossible, and these particles together with the stimulus of the air upon the persistently open eye, cause hyperæmia of the conjunctiva, which may increase to catarrhal inflammation, and is not unfrequently accompanied by inflammation and ulceration of the cornea and impairment of vision.

The patient loses the power of wrinkling up the nose on the affected side, of raising the upper lip, of laughing, and of drawing the angle of the mouth up on that side. The lips cannot be pursed up, because the paralyzed side drags behind. Whistling becomes impossible, and when any attempt is made to blow out the cheeks, the air escapes on the paralyzed side, as does also water when the patient tries to drink. Speech is rendered indistinct as regards labial sounds, because the necessary movements of the cheeks cannot be made. The movements of the cheek necessary to mastication, as before mentioned, also fail, and mastication is rendered difficult because the food lodges between the cheek and teeth, and has to be brought back again by the finger. The external muscles of the ear are also immovable, though it is only in occasional instances that the failure of their function can be ascertained with certainty; now and then paralysis of the platysma, of the posterior belly of the digastric, and of the stylo-hyoid muscles, can be demonstrated.

Attention must also be directed to some other symptoms, which are, however, present only in some cases.

Behaviour of the velum palati and uvula.—When affected, the former hangs loosely downwards, occupying a lower position than on the sound side, and exhibiting decidedly diminished action in phonation and upon reflex irritation. Difficulty of swallowing is sometimes present. The speech may acquire a nasal twang, and while drinking fluid may

escape through the nostril. The uvula may be affected, inclining either to the sound or affected side; some observers, however, deny that such obliquity is abnormal. These symptoms when present are to be explained by the great superficial petrosal nerve being paralyzed, this supplying the levator palati and azygos uvulæ.

Behaviour of sense of taste and of salivary secretion.

The chorda tympani, which comes off in the lower part of the Fallopian tube is, the chief agent in the sense of taste for the anterior two thirds of the tongue, and is the principal secretory nerve for the submaxillary gland.

When the chorda tympani is involved in the paralysis, careful testing will show that the sense of taste is completely abolished, or greatly affected (especially for sweet, acid and saline substances), in the anterior two thirds of the tongue corresponding to the paralyzed side.

A diminution of salivary secretion and consequent dryness of the mouth is sometimes seen.

Behaviour of hearing.

Roux first noticed in his own case a disagreeable sensation in his ear with loud noises. This symptom has since been established by various observers, and there can no longer be much question that the abnormal acuteness of hearing for musical sounds, which often expresses itself as an abnormal perception of deep notes, present in facial paralysis is referable to paralysis of the stapedius muscles and the resulting over-action of the tensor tympani.

Sense of smell.

This is sometimes lost on the affected side: from abnormal dryness of the nose: from insufficient supply of tears: and from the paralysis of the muscles of the nose.

Position and movements of tongue.

The paralysis of the digastric and stylo-hyoid appears to exercise no noteworthy influence on the position or movements of the tongue. The statements in regard to the obliquity of the tongue, in cases in which the hypoglossal nerve is not also involved appear to depend upon an error of observation which is easily explained; for on opening the mouth its paralyzed angle is drawn towards the healthy side, and is conse-

quently nearer to the edge of the tongue than the healthy angle is. Thus the tongue may present the appearance of being in an oblique position.

I shall now briefly relate what cases I have seen and some of those I have read of.

Case I. The first case I have to bring before your notice is recorded in Garretson's "Oral Surgery," as reported by Dr. Coale; it is also to be found reported in the 5th Volume of *The British Journal of Dental Science*.

Patient was a healthy girl, aged 18, who at first noticed that her face was stiff, and in twenty-four hours completely paralyzed on the left side. There was great distortion on laughing or talking, a staring left eye and tenderness of the whole of the left side of the face.

No cause could be found for the paralysis unless it were that she had defective teeth in each jaw; as much, however, on one side as on the other. The treatment consisted of leeches to the points of exit of the nerves, strychnia, but with no benefit; after the lapse of three weeks she was advised to have her carious teeth removed and thirteen were accordingly extracted. This was followed by marked improvement in the course of five days. Electro-galvanism was then gently applied and the patient recovered. This case may, I think, fairly be set down as one of reflex paralysis.

Case II. This is also from Garretson. The patient being exposed to cold during the eruption of the left wisdom tooth, was seized with left facial paralysis. At the end of seventeen months this had completely disappeared. General treatment blistering and electro-magnetism being employed. Nothing, however, is said about the condition of the mouth either before or after recovery beyond that "the swollen gum was freely excised."

For about ten months the patient enjoyed good health, when he was again attacked with facial paralysis of the right side. The gum on this side was swollen. Treatment almost similar to that pursued during the first attack was adopted. At the period when the report was drawn up, about four weeks from the date of the second attack, the paralysis was lessened in extent, and the general health of the patient was

good. The gum was less swollen but the tooth had not yet made its appearance.

Although the history of the case makes it probable that the paralysis was of reflex origin, still, I think that the exposure to cold which merely happened to be at the time of the eruption of the wisdom teeth would be a sufficient cause to account for the symptoms. It is certainly remarkable, however, that the paralysis should have occurred at these two periods.

(*To be continued.*)

Reflections from the Surgery.

A CASE IN PRACTICE.*

By Dr. W. D. MILLER, Berlin.

The following case may serve to demonstrate the pathogenic nature of certain micro-organisms which are occasionally, to say the least, to be met with in the human mouth, and the consequent possibility of the infection of either patient or operator through wounds incurred during the performance of dental operations.

Frau X., somewhat anæmic, otherwise in good health, called upon me some weeks ago, complaining about often having a taste of old Limburgh cheese in her mouth. I immediately examined the dental arch without finding a trace of suppuration anywhere, and but very slight decay. Turning my attention to the throat, I at once discovered the cause of the complaint, the very much enlarged tonsils being almost concealed by a thick, yellowish-white coating, which was found to consist of masses of many different fungi, cocci and diplococci predominating, some of the latter appearing to be surrounded by a delicate gelatinous sheath. The coating upon the surface of the glands was removed without much

*Presented before the American Dental Society of Europe, August 28, 1884 and reported in the *Independent Practitioner*.

difficulty, partly mechanically, partly by means of antiseptic washes. It was found, however, that the fungi had penetrated the fissures between the folds of the tonsils in some places to the depth of one-fourth, or one-half an inch, where they were entirely secure against the action of the most powerful antiseptics superficially applied.

After a great many unsuccessful attempts, by myself as well as by the family physician of the patient, I accomplished a partial success by dipping a delicately curved probe into a ninety per cent. solution of carbolic acid, and then working it between the folds of the glands wherever nests of fungi had been established.

A complete eradication has, however, up to the present day, not been accomplished.

When this case was first observed, a small quantity of the saliva was brought into about fifty c.c. of sterilized calves' broth, and allowed to stand for four or five hours at thirty-seven degrees C. At the end of this time one c.c. of the solution was injected into the lung of a full grown rabbit. Death occurred in thirty hours, the blood of the animal being densely crowded with cocci and diplococci, surrounded for the most part by a wide sheath, best seen when stained with a solution of gentian-violet in aniline water.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

The next meeting of the above Society will take place at the rooms, 40, Leicester Square, on Monday April 13th, at 8 p.m. Papers by Bland Sutton, Esq., F.R.C.S., "On Injuries and Diseases of Jaws in Wild Animals."

Casual Communications by Messrs. F. N. Reilly, D. A. Hunt, A. S. Underwood and F. H. Weiss.

Daniel Hepburn, }
R. H. Woodhouse, } Hon. Secs.

British Journal of Dental Science.

LONDON, APRIL 1, 1885.

A PRESIDENTIAL ADDRESS.

OUR readers must have read with a true zest the simple but forcible speech which was delivered by Mr. Spence Bate, upon his assuming the Presidential Chair of the Odontological Society of Great Britain. To sketch the history of that association of "choice spirits," is to indite the narrative of how the chosen few from the serried ranks of the dentists, have struggled for honour, and battled for what they held dearer than life—professional esteem. The horizon of dental history is but narrow. In point of time, dentistry as a science is a mere infant, but it is an infant which has revealed the most astounding power of growth and ability for advance. To many still in the forefront of polemic *melée*, the foundation of the Odontological Society seems but as yesterday, while to the younger men it appears inconceivable that such an institution as the Odontological Society should ever have had any difficulties to surmount, or breakers ahead against which to take timely precaution. The history of this Society was deftly treated by Mr. Spence Bate, though even his loving hand failed to make all the rough places smooth. Perhaps none of the multifarious societies which have been called into existence by the desire of specialists to exalt their own branch of learning, have had more vicissitudes against which to contend, or more real honest pioneer work to perform, than has the Odontological Society. In glancing over the papers which figure in the Transactions, one is struck with the high tone and merit which in most cases they present. The inevitable "gag" is here less prominent than in sister societies whose range of members is wider. It

seems as though this Society had sternly set its face against having papers entered upon their Transactions, the only merit of which lay in the author's manifest desire to put himself before the world. Very many of the volumes of the Transactions are enriched by papers of the first merit—papers which in after years are looked up and quoted.

But wholly independently of the character of the papers, there is a manly tone about the meeting which goes far to exalt the Society. There can be little doubt that the Odontological Society of Great Britain has performed functions far other than purely scientific. The *cultus* of dentistry, if we may be permitted the expression, owes much to it, while the impetus given to the scientific side of dentistry, by a critical body of men such as the Society presents, is not easily overestimated. There is an important point about this Society naturally hinging upon its history. We are told that many of the younger members of the profession are conspicuous by their absence at its meetings; whether this statement be wholly true does not concern us, although for the sake of the juniors one might well hope it were an exaggeration. The point to which we allude is, that now times are so changed that many might fail to recognize as an imperative duty, personal support and personal attendance at such meetings. It was in the old days that members went to the meetings because they possessed a personal interest in a Society instituted by themselves and owing its very existence to their zeal or it might be self-denial; and so it was that going to meetings they took very good care that 'the feast of reason' should be well supplied with provisions. But now the Society has grown to a respectable middle age, the younger scions of dentistry do not appreciate the fact that its benefits must year by year decrease, unless they are willing and are determined to make themselves capable of filling the gaps which the untiring hands of Death have created in the ranks of those

who made the Odontological Society of Great Britain what it now is, so erecting to their own memory a memorial of undying honour and respect.

FINE ART EXHIBITION AT CAMBRIDGE.—We draw attention to a letter from the Secretary of the British Dental Benevolent Fund, which appears in our correspondence. He makes a suggestion which has two distinct and very strong claims for the support of all well-wishers of the Science and Art of Dentistry. Briefly, it is that a collection of wood, bone, ivory carving, etc., with modelling, painting, and artistic work in general, be made and exhibited at Cambridge during the August meeting of the Association in that Town. All these Fine Art exhibits are to be from the hands of dental practitioners. As admission is to be paid for, it is hoped that a sufficient sum will be gathered to be an acceptable addition to the Fund.

WE SAID the scheme had two distinct claims upon our support; the first, of course, is that it proposes to enrich the coffers of the Dental Benevolent Fund, the support of which we have again and again urged upon our readers, and the second claim if second in order, is hardly of less primary importance, viz., that it will give an impetus to Art development in our midst, while it evinces to an observant public that the “limitation,” as Mr. Oakley Coles puts it, of our Profession to “plugging and extracting teeth is a pitiful idea,” and “a distinct error.”

TO RELIEVE NEURALGIC PAINS.—The following combination attributed to Dr. J. L. Ludlow, of Philadelphia, is highly spoken of as a local remedy for neuralgia:

R	Atropinæ sulphatis.	gr. ss
	Aconitinæ	gr. iss
	Olei tigllii	gtt. ii
	Ung. petrolii	ʒii—M

ROUGH ENAMEL.—Dr. Francis draws attention in the *Independent Practitioner* to the advisability of smoothing down rough enamel. Being requested to treat a very bad case, in which the enamel was full of pits and roughnesses, he cut the rough surfaces away with broad, sharp chisels and files, and polished with pumice. The result proved a complete success, and from that time they have remained whole and clean.

CITING another case, that of a youth of fifteen summers, with superior incisors much eroded, their entire labial surfaces roughened by acidulated secretions. The teeth were somewhat stained and a little sensitive. The surfaces were smoothed with fine corundum wheels, and polished with corrugated rubber discs charged with finely-ground Arkansas stone. For three years they have kept splendidly, are bright and clean, and present a far better lustre than in their original or normal condition. These cases, he thinks, justify the practice of interference with the enamel.

BLEACHING SPONGES.—According to *Items of Interest* the subjoined method answers well: Remove the sand by shaking; wash the sponges in hot water, and press as dry as possible. Then place in a bath of dilute muriatic acid for half an hour, remove, and after washing well in hot water, place in a bath of fresh acid. to which has been added six per cent. of hyposulphite of soda, and allow it to remain for twenty-four hours. The sponge is then finished by washing in water and drying.

EXTRACTING A TOOTH TO GIVE BIRTH TO A CHILD.—Under the above somewhat sensational title an American dentist narrates how a certain lady patient informed him of the following personal experience. After giving birth to six children without any very marked departure of the normal course of parturition, she was taken in labour of her seventh child. The labour pains, after lasting for an hour, suddenly shifted from the back to a tooth. This tooth had given trouble for some nine months previously. The tooth pain

was paroxysmal just as if it were a rhythmic as with the womb. The practitioner in attendance was anxious to extract the tooth but yielding to the earnest solicitations of the patient he applied chloroform on cotton wool instead. This relieved the toothache and started the labour pain afresh. Again the pain seized the tooth, and again the chloroform gave relief which was again only transient. Finally the tooth was extracted, then the protracted delivery was rapidly effected.

TREATMENT OF NEURALGIA.—A prescription of which Prof. Garretson speaks highly, consists of :—

R Ferri sulphatis exsic
 Potassii carbonatis, aa gr. ccl
 Syr. acaciæ q. s—M.

Ft. pil. No. 100.

Sig. Begin with three a day, and increase to six ; take several hundred.

TEARING OF THE DENTAL NERVES IN PERSISTENT NEURALGIA.—M. Monod, says *The British Medical Journal*, has successfully treated two cases of obstinate dental neuralgia by tearing the extremity of the dental nerve. The first patient has remained perfectly free from pain during thirteen months. M. Monod trephined the ramus of the inferior maxilla by Warren's process ; neuralgia reappeared at the end of six months localized at the mental foramen, M. Monod trephined the bone behind the mental foramen, adopting Jules Roux's process ; the nerve was then torn, and the patient was rapidly cured. Stretching the inferior dental nerve has been proved successful in one case only, by M. Mark Sée. Tearing the nerve has resulted in cure in thirteen cases. The same operation has been performed on the infra-orbital nerve with satisfactory results.

OPERATION FOR CLEFT PALATE.—It often enough falls to the lot of dentists to advise as to the utility of having palatine cleft sewn up. It is at the present time, no easy matter upon which to decide, as the deviaration of opinion is so emphatic

the upholders of opposed views so positive. Mr. Morgan read a paper before the Harveian Society. After referring to the gaps still remaining to be filled in our knowledge of the etiology of the deformity, the author inquired whether cases ever occurred in which the surgeon need despair of producing some benefit by operation. Assuming that only partial closure would be obtained, the size and weight of the obturator required would be materially reduced, and its adaptation rendered easier. The wearing of an apparatus previously to operation was denounced on account of expense, and of the damage caused to the teeth, as well as of its ill effect upon the state of the cleft. Partial failure to close the whole opening at a first attempt did not stand in the way of complete success on a second occasion. The period between two and a half and three years was recommended as the most suitable age for operation. The method of dividing with curved scissors the attachment of the soft to the hard palate, and of making long incisions parallel to the edges of the cleft, was advocated as the best means of reducing tension, and as less likely to interfere subsequently with the action of the muscles of the soft palate, and with their function of closing the opening between the nares and the pharynx. An analysis of 25 cases was given; 14 were completely successful, and 10 partially so. One failed altogether on the first attempt, but was dealt with successfully later. The result upon the voice in those cases where attention had been given to proper training was stated to have been most satisfactory, and the necessity of careful and systematic teaching after the operation was strongly urged.

“A LONG FELT WANT.”—The following brief announcement, which appears in a Glasgow contemporary, is very refreshing, the modesty of a dentist, who first advertises and then draws attention to the alleged fact that he is a *thoroughly competent* dentist is really too good to be spoiled by comment. “An Ayr dentist, having advertised that by visiting Irvine once a week he would supply a long felt want—viz., the services of a *thoroughly competent dentist*—the local dentist sued him before the Sheriff, and has got the advertisement withdrawn.

NERVE VIBRATION A CURE FOR TOOTHACHE.—Dr. W. H. Neale found great benefit accrued in a case of neuralgia of the facial nerve from percussion. An ivory disc was made to vibrate so as to strike the seat of pain ninety times in the second. In eight minutes the pain disappeared. The next step was to seek out other seats of pain and subject them to a similar percussion. Dr. Neale reports that the case was wholly cured. This mode of treatment should certainly be had resort to in the so-called epileptiform tic.

SUB-MUCOUS INJECTIONS OF CHLOROFORM.—M. Gaspard Guillot writing to the *Progrès Medical*, gives his personal experiences in cases of obstinate dental neuralgia and alveolar abscess says he finds this plan useful. Two or three drops are usually injected at a time. Dr. Doss, who has given a large number of the injections has met with marked success. The pain was quickly subdued without bad results.

BAD ARTICULATION OF A FILLED TOOTH is often occasion, says the Editor of *Items of Interest*, for severe soreness, and sometimes of serious inflammation. In the first years of our dental practice we generally referred such disturbance to having approached too nearly the pulp in excavating, or to a too severe pressure of the filling where the floor of the cavity was very thin, or from thermal changes. These may sometimes be the cause, but more frequently, we now think, it is from a too great pressure in occlusion. Look on the surface of your filling and see if the antagonizing tooth has not made a bright spot on it. Grind the surface down here, and see if there is not almost instant relief.

A MEDICAL STUDENT AGED SEVENTY-FOUR.—The Berlin correspondent of the *British Medical Journal*, writes: It is not often that one hears of a student of the age of 74 taking a degree at a university. The "bemoostes Haupt" is sometimes to be seen at German universities, but he is generally a man who has spent his best years in idleness. The Nestor of the Berlin students to whom I now refer has been studying

at Berlin since 1881, and has just taken a degree as doctor of Medicine. The Professors addressed him as "Worthy Colleague," the students as "Papakin." In 1833, he was matriculated at Berlin, and studied theology till 1837, and spent his time from then till 1881, as a missionary in South Africa. It had been his wish all his life to study medicine, but pecuniary difficulties stood in his way, Now that he has passed his examination, having worked with all the zeal of a young student, he is going to return to Africa, where he will practice medicine.

DENTITION SYRUP.—The subjoined simple recipe has achieved a rather wide reputation as a soothing syrup :

R. Juice of fresh tamarinds,	3 gm.
Infusion of saffron (strength 3 per cent.),	2 ..
Purified honey,	10 ..
Tincture of vanilla,	25 ..

Reviews.

Aide Mémoire du Chirurgien Dentiste, par MM. PAUL DUBOIS, D.E.D.P., Chef de Clinique à l'Ecole Dentaire de Paris; Drs. A. A. AUBEAU, et L. THOMAS, Professeurs à l'Ecole Dentaire de Paris: Delahage et Lecrosnier, Paris.

The work before us is, we are told, issued under the immediate patronage of the Free Dental School in Paris. It forms an Annual for the year 1885. It will be impossible for us, with the space at our disposal, to do more than indicate the very wide range which this neatly got up little volume allows itself. After a brief preface we find an historical notice of the progress of dentistry from the time of Æsculapius downwards. In the account of the progress of dentistry during the nineteenth century, there is an unfortunate lack of information concerning the work amongst English dentists. While Spooner, Goodyear, and Tomes receive a few words, names of other Englishmen are conspicuous by their absence. In the next section we find arranged in alphabetical order a

succinct account, not only of dental lesions proper, but of general diseases, such as diabetes mellitus, &c., find a place. The way that these matters are treated is as follows: A paragraph is devoted to a general description of the complaint, then comes another upon the etiology, while one on the treatment closes the whole. If there be many things introduced here which appear to us unnecessary, such as the several pages devoted to poisons, we must admit that upon the whole it is well done. The paragraph on hæmorrhages is too brief—hæmorrhage is a subject of the first importance for dentists to be familiar with, and yet we find it discussed in eight lines.

Hæmostatics are discussed in a page and a half, and they are certainly more important to the practical dentist than either epilepsy or heart disease. It seems to us that in future editions it would prove far more useful to cut out many articles in this section and lengthen several which now are squeezed into far too shortened a compass. Take neuralgia for example, a trouble which is represented largely in the daily work of every dentist. Obturators again come off rather badly, the improvements of Oakley Coles in this country and Kingsley in America, being passed over. Under the heading of Therapeutics, Hygiene and Operative Dentistry, we find a large amount of useful information, no less than fifty pages are devoted to anæsthetics, a large share being accorded to M. Paul Bert. The names of Dr. Telschow and M. Heymen Billard appear in prominent positions. We fail to find references to such men as Snow, Clover, and many others who have shed so much light upon this subject on soil other than French. Marshal Hall's name is allowed to appear as *Marschall*, but his method and that of Sylvester do not receive an amount of explanation sufficient to make them capable of being understood by the readers of this manual. The article upon local anæsthesia is mainly devoted to freezing by ether. Some useful formulæ are given for various washes, dentifrices, but even here we cannot help being struck by the tendency the authors show towards confining the information to purely local authorities. Transplantation of teeth has recently attracted so much attention that one feels hardly satisfied with

its subject matter being treated with three parts of a page. We now turn to the section dealing with a Review of the year which one naturally expects to find somewhat discursive. An effort has clearly been made to do justice to the large amount of material which good, bad, and indifferent has flooded the dental world during the past twelve months; how far the object has been achieved our readers will perhaps best be able to answer for themselves. A portion of the book, which were it more complete, could not fail to be of immense use, is that devoted to the bibliography of Dental Surgery; it is what was distinctly wanted, but we venture to think the want is still felt. A good deal of information concerning the Dental School of Paris closes this work.

Summing up, it seems to us the manual before us is one of distinct merit and value, it has set before itself a difficult rôle and we believe that as the years pass by it will make up for whatever shortcomings we may have indicated above. English dentists who read French will find it a handy enough volume to be on their reference shelves.

Literary Notices and Selections.

DENTAL MYTHS.

Collected by GEO. L. PARMELE, M.D., D.M.D., Hartford, Ct.

For some time past it has been my habit to make a note of such curious items concerning dentistry and the teeth as have come to my notice, which have been jotted down in my "card record"* for future use. One of the most interesting departments of this collection of "Dental Bric-a-Brac and Curios" is that relating to Dental Myths and superstitions from a large mass of which I select the following, hoping they may prove as interesting to the readers of the *Dental Annual* as they have to me. By far the greater number of those here recorded are culled from back numbers of that valuable and interesting journal, *Notes and Queries*, which name I have abbreviated to N. and Q. in giving my references. The first two relate to signs attributed to certain peculiarities

*See the New England Journal of Dentistry, Jan. 1884.

and arrangement of the teeth, then a talisman to aid in cutting teeth, followed by a variety of quaint cures, charms, and incantations for the prevention and relief of that dire misfortune—toothache,

“Ruthless tormentor! who with constant gnawing
Scoops thy dark caverns in my aching grinder,
Like mining mole.”

An English writer (A. D., N. and Q. 1st, Ser. Vol. VI. 601,) says: “A young lady the other day, in reply to an observation of mine, ‘What a lucky girl you are,’ replied, ‘so they used to say I should be when at school,’ ‘Why?’ ‘Because my teeth were set so far apart; it was a sure sign I should be lucky and travel.’” “A similar (perhaps the same) piece of childish superstition respecting the teeth is, that when the upper incisors are large, it is a sign that you will live to be rich. (N. and Q. 1st. Ser. Vol. VII-177.) The following extract from an old letter (Zz. in N. and Q., 2nd Ser. Vol. VIII. 326) gives a charm for cutting teeth: “I have made your daughter a present of a wolf’s tooth, I sent to Ireland for it, and I set it here in gold. They are very lucky things; for my twoe ferst ones did dye, the other bred his very ill, and none of ye rest did, for I had one for al the rest.” This letter was from Lady Wentworth, to her son Lord Strafford and dated March 26th, 1713.

To “Notes and Queries” (2nd Ser. IX. 381.) B. B. Woodward writes, as follows: “It may be worth noting as a piece of Norfolk folk-lore that the tooth-ache is commonly called the ‘*love pain*’ and, therefore, the sufferer does not receive much commiseration.”

Probably all of us have heard of the following gold tooth superstition, which seems to be widely spread.

A correspondent says (N. and Q. 1st Ser. Vol. 8. 382.) Among the lower orders and negroes, also among young children of respectable parents, (in New Brunswick,) (who have probably derived the notion from contact with the others as nurses and servants,) it is very commonly held that when a tooth is drawn, if you refrain from thrusting the tongue in the cavity, the second tooth will be golden. Y. S. M., in N. Q., (1st Ser. Vol. IX. 337,) relates his own experience in trying to get a gold tooth when a child, and his

bitter disappointment experienced after keeping his tongue away "twenty-four hours," at not having a golden tooth. He also says that "this folk-lore (query lure) was, and I believe still is, in full force in the south of Ireland and probably elsewhere." That this superstition was common in Yorkshire is proved by a note in N. and Q. 1st Ser. Vol. VIII. 382. In the west of Scotland this myth prevailed, with the difference that keeping the tongue away would prevent another tooth from growing; they had not advanced so far as the gold tooth theory. (N. and Q. 1st Ser. IX. 337.)

The people of Ceylon and Malabar used to worship the teeth of elephants and monkeys. The Siamese once offered to a Portuguese, 700,000 ducats to redeem a monkey's tooth. A wolf's tooth was worn as an amulet by children to charm away fear. (Dict. of Phrase and Fable.)

A lady informed me a short time ago, that whenever she lost a temporary tooth, her nurse told her she must destroy it in some way, for if she lost it and any wild animal should swallow it, her second tooth would be like that of the beast which devoured it. The above myth is somewhat akin to the following note by G. N. (N. and Q. 1st Ser. Vol. X. 232.)

"About thirty years ago it was a very common practice among the respectable middle ranks in this part of the west of Scotland, when a person had a tooth extracted for toothache, to wrap it up carefully in a piece of paper, carry it home and after examining its infirmities, along with a large pinch of salt, to throw it into the fire. I have seen this done, and think the general idea which then prevailed was, that after this ceremony the person would never again be troubled with toothache, and it may have acted upon the imagination in the light of a *charm* as much as such could be expected to perform. The practice may have had a remote superstitious or religious origin, as in so many other cases where salt was concerned in expelling devils and diseases; but I must leave learned readers to trace the connection farther, adding only a short extract, which in its own degree may once have influenced the popular belief from *Benedictio Salis*. "*Bene—dic—hanc creaturam salis ad effugandum inimicum et ei salubrem medicinam immitte, vi proficual sumentibus ad animae et corporis*

sanitaram." *Manuale Exorcismorum*. Antverpiac 1619 P. 299.

C. Clifton Barry (N. and Q. 1st. Ser. X. 233.) says that the idea that salt has the power of resisting and counteracting the injurious tendencies of sympathetic influences is very ancient, and refers to Mr. Sternberg's *Dialect and Folk-lore of Northampton* p. 166, where the custom is noticed and illustrated by a curious quotation from Sir Kenelm Digby.

In Lancashire the custom prevailed also. "That they shall not hunt for it when they die." (N. and Q., 4th Ser. VI.—68.)

Of the multitude of charms and myths which we find recorded for the cure of toothache, graveyard and corpse-cures seem to have been the favourite. Rhymes and incantations rank next, and then follows a variety of miscellaneous charms, which admit of no classification. From a large collection of these myths I have selected the following interesting examples. *Rhymes, &c.* A writer in N. and Q., (1st Ser. Vol. I. 293.) after advising myths and folk-lore hunters to cultivate the acquaintance of priests, especially young curates, who become familiar with such subjects from the ignorant and superstitious members of their flocks, gives the following conversation between an old dame and her Pastor.

P. "Well, Dame Grey, I hear you have a charm to cure the tooth ache. Come, just let me hear it. I should be so pleased to know it."

Dame. "Oh, your reverence, it's not worth telling." (Here follows a long dialogue, he urging, she refusing to tell, which ends in her saying ;) "Well, your reverence, you have been very kind to me and I'll tell you, it's just a verse from Scripture, as I says over those as have toothache, 'And Jesus said unto Peter, What aileth thee? And Peter answered, Lord, I have toothache. And the Lord healed him.'"

Priest. "Well, but Dame Grey, I think I know my Bible, and I don't find any such verse in it."

Dame. Yes, your reverence, that is just the charm. It's in the Bible, but you can't find it." This same charm is used by the lower orders in the county of Kilkenny and perhaps other parts of Ireland. A correspondent (N. and Q. 1st Ser. Vol. 1 349) says, I have often heard the charm which with them commences thus: "Peter sat upon a stone, Jesus

said unto him," and so on, as in the English form. T. J. p. 429, gives another form.

"As Peter sat on a marble stone,
The Lord came to him all alone :
Peter what makes thee sit there ?
My Lord I am troubled with the toothache.
Peter arise and go home :
And you, and whosoever for my sake
Shall keep these words in memory,
Shall never be troubled with the toothache,"

Here is another form. G. Tr. in N. and Q. 1st Ser. Vol. III. 20, says : "The following doggrell, to be written on a piece of parchment and worn around the neck next the skin. :

"When Peter sat at Jerusalem's gates
His teeth did most sorely eake (ache.)
Ask counsel of Christ and follow me
Of toothache you shall be ever free.
Not you a lone but also all those
Who carry these few laines safe under clothes
In the name of the Father, Son, and Holy Ghost."

(Copied verbatim.)

Still another form of the same charm comes from X8, (N. and Q. 2nd Ser. X. 364.) who, asking a boy (in a country village in Berkshire,) who had suffered with this malady, what he did for it, the boy produced the following charm, written by his father, and which he was to constantly carry about with him.

"When Bortron (or Bertron,) sat on a marble stone, near the gates of Jerusalem, Jesus said unto him, 'what troubleth thee, O Bortrom.' He answered and said, 'I am troubled with the toothache.' Jesus said, 'arise and fellow me, and thou shalt be healed of thy pain, and not thou only, but every one that shall carry these lines for my sake.' Amen."

Says F. C. H., (N. and Q. 2nd Ser. X. 364.) When the late Cardinal Weld began his clerical career as a humble missionary priest at Chelsea, he related to me a case which had just occurred in his flock. He learned from a young woman that she had a charm for the toothache, when he exhorted her to destroy it, she said, the person of whom she purchased it had solemnly warned her never to open the sealed paper, for that if she did, her toothache would return. However, the exhortation of the good priest prevailed. She

handed it to him to open and was horrified to read the infernal compact written within, and to think that she had been so long carrying it about her. The words were :

“Good Devil, cure her,
And take her for your pains.”

In Vol II 1st Ser. N. and Q., page 130, a writer gives the following quotation from a curious but not rare volume, entitled “Choice and experimental Receipts in Physick and Chirurgery, as also Cordial and Distilled Waters and Spirits, Perfumes and other curiosities collected by the Honourable and Truly learned Sir Kenelm Digby, Kt., Chancellour to Her Majesty the Queen Mother, London. Printed by H. Brome, at the Star in Little Britain, 1668.”

“A sympathetic cure for the toothache. With an iron nail raise and cut the gum from about the tooth till it bleed and that some of the blood stick upon the nail ; then drive it into a wooden beam up to the head ; after this is done you shall never have the toothache again all your life.” The author naïvely adds : “But whether the man used any spell, or said any words while he drove the nail I know not ; only that I saw done all that is said above. This is used by several certain persons.” Another of the “choice and experimental receipts and curiosities” in the book for the same malady, is this : “Take two parts of the moss growing on the skull of a dead man, (pulled as small as you can with the fingers,) &c., &c.

In point of efficacy no cure was reckoned greater than a tooth taken from the mouth of a corpse which is often enveloped in a little bag and hung around the neck next to the skin. Sometimes a “double nut” is enclosed in the same bag, to aid the cure. (N. and Q., 1st Ser., Vol. II. 37.) C. Hoey, gives the following in N. and Q., Vol. IV.

“In the village of Drumcondra, about a mile and a half on the northern side of Dublin, there is an old churchyard remarkable as the burying place of Grandon the architect, Grose the antiquary, and Thos. Furlong, the translator of Carolan’s Remains. On the border of this churchyard is a well of beautiful water, which is resorted to by the folks of the village afflicted with toothache, who, on their way across

the graves, pick up an old skull, which they carry with them to drink from, the doing of which they assert to be an infallible cure. Others merely resort to the place for the purpose of pulling a tooth from a skull, which they place on or over the hole or stump of the aching tooth, and they affirm that by keeping it there for a certain time the pain ceases altogether."

A correspondent, W. C. (2nd Ser. Vol X-463.) shows the wearing of the tooth of a corpse around the neck, was believed in Hampshire, and mentions the case of a lad who still firmly believed in the charm and still wore the suspended tooth, notwithstanding the fact that he was still suffering.

Here is another form of graveyard cure. (N. & Q., 3 Ser. Vol III-136.) S. Redmond relates that he has actually known the following curious cure put into practice in Dublin, Ireland, of course without relief. "The person afflicted is to proceed at an early hour in the morning, to some graveyard and procure a sharp pointed piece of wood, a skewer, and with the aching tooth push it into a newly-covered grave and the pain would cease."

Another nail driving cure is given in N. and Q. 3 Ser. Vol. X. 505, where the nail must be driven into an "Oak tree and no other tree than the oak would suit." Here is a Staffordshire and Shropshire superstition, found in N. and Q. (Vol. X. 1st Ser. p. 6.) "A mole trap must be watched, and the moment it is sprung, and whilst the poor mole warps is *in extremis*, but before life is extinct (for on this latter condition the success of the charm depends) his hand-like paws are to be cut off and worn by the patient. A dexter paw must be used, should the offending tooth be on the right side of the jaw, and the contrary." The writer adds: "This appears to point to the Italian amulet in the form of a hand, against the evil eye. I have seen a mole's paw mounted in silver in London." B. H. C. records, (N. and Q. 3rd S. Vol. V. 393.) the Wiltshire method. "Take one of the fore legs of a *want* (*i.e.* a mole) and one of his hind legs and put them in a bag, and wear the whole hung about your neck."

An aged widow of this city (Hartford, Conn.) told me of the following charm which she tried at the age of 17 while

suffering from toothache, and she declares that she has never been troubled since that day with her teeth. "Get down on your knees and, without touching your hands to the ground, pick up with your teeth an old bone. Arise, and without looking back go as many steps forwards as you wish to live years without toothache. Then return the bone to where you found it." In Sussex they say, if you always clothe your right leg first, *i.e.*, if you invariably put your right stocking on before the left; right leg into trousers before the left; right boot, &c., &c., you will never have toothache. (N. and Q. 2nd Ser. Vol. VIII. 484.) A simple cure is to anoint the teeth with ear-wax of a dog." (Correctors of accidents to procure sleep. Anatomy of Melancholy p. 414.) T. N. gives (N. and Q. 3rd Ser. VII. 433) the following receipt of an old Rosendale dame, who declares that when a girl she tried the experiment with the happiest effect, never since having suffered toothache. "Receipt for the prevention of toothache. Pare your finger nails, wrap the parings in a small piece of paper, make a slit in the bark of an ash tree; loosen the bark a little from the trunk, slip the small paper parcel under the bark, press the opening together again as closely as possible and you will no more be troubled."

The last charm I offer is similar to the one just related, and is contributed by C. Y. Crawley, to N. and Q (3rd Ser. XI. 233). It is a Gloucestershire cure. He says: "In conversing with an old bedridden man yesterday, in this parish, fast approaching fourscore and ten, I said to him, "Why, Benjamin, you have wonderful good teeth still for your time of life, I suppose you have never suffered much from toothache.' Well, then, sir, I'll tell you how it was,' said the old gentleman, 'I used to suffer very much from toothache many years ago till a neighbour told me how to cure it. I got up on Good Friday before sunrise, and cut all the nails on my hands and feet and wrapped it all in a bit of writing paper and put it in my pocket and I've never had the toothache since.

Here ends my collection for the present, and if the charms given above serve to help some brother practitioner to quell an aching molar I shall feel fully repaid for the time I have spent gathering them together.—*Caulk's Dental Annual*.

Abstracts of British & Foreign Journals.

INDEPENDENT PRACTITIONER.

SOME EVIDENCES OF PREHISTORIC DENTISTRY IN ITALY.

By J. G. VAN MARTER, A.B., D.D.S., Rome, Italy.

Dr. Marter began several years ago to study the vestiges of the Etruscans. The Etruscans, once a great and powerful nation, far advanced in civilisation, science, and the arts, have been an extinct race for more than two thousand years. There is no key to their strange language, and no history except that which is written in their tombs. But from these tombs, recently, we obtain conclusive evidence of a highly cultivated and intelligent race of men, and of the influences on them of a still earlier race.

"Visiting many of the subterranean Etruscan and Roman tombs, I examined the interesting and valuable collection of Etruscan relics in the Corneto Museum. Here is found, carefully guarded with lock and key, the two specimens of ancient dentistry." The authenticity of these specimens of ancient Etruscan and Roman dentistry is vouched for by competent authorities.

The necropolis occupied a large extent of territory, which was covered with similar tombs, some larger and some smaller. The average length and size may be inferred from the relative size of the entrance door, which was sufficient to easily admit a full-grown man. In those visited one descends from twenty to forty steps below the surface of the earth, into the vault beneath, which is a room varying in size in different tombs, from ten feet square and eight feet high, to thirty feet square and ten feet in height. The tombs are then fully described.

Beneath the ruins of one of these Etruscan tombs a partial denture was found. It was an arrangement for holding in position three superior artificial teeth, by banding them to adjoining natural teeth. The cuspid and later incisors were natural teeth, while the two central incisors were evidently

carved from some large animal's tooth, to fit the space. Another partial denture taken from an ancient Roman tomb, dating back four hundred years B.C., was also unearthed. The remaining tooth in this specimen was evidently a human tooth, as, no doubt, was the missing one. It represents the the early Roman method of replacing two inferior incisor teeth on the Etruscan plan. The gold used in these specimens was very soft, evidently made so for the purpose of more easily slipping the rings over the natural teeth, in adjusting the piece in the mouth. The two centrals in the first dentine were well carved, and the dentures were cleverly made.

"These are," the writer adds, "the earliest known essays at dental bridge work. What conclusions are we to draw from these evidences of early dentistry? In view of the recent discovery of wonderful surgical instruments found in the ruins of Pompeii, instruments that have been re-invented in recent years to meet the demands of modern surgery, one is almost inclined to call a halt before expressing any opinion, and wait a little longer for the excavators to dig up Etruscan or Umbrian telephones, and evidences of railways and steamboats."

An Etruscan skull in Dr. Marten's possession is portrayed which was taken from one of the ancient tombs at Corneto. It is minus the inferior maxillary, but it shows clearly a missing right superior first molar, and evidence of alveolar abscess, proving conclusively that Etruscan mortals suffered the pangs of toothache like mortals of to-day. In shape and size this skull very closely resembles the early Egyptian heads. Ebers has shown they had teachers of dentistry three thousand years ago. Sir Spencer Wells, related to Dr. Marten the story of a dentist who practiced in Egypt, and who had seen mummy teeth that had been filled with a kind of fusible metal. The noted archæologist Mr. Forbes, stated that he has seen mummy teeth that had been filled with gold. A noble Roman princess averred she has seen Etruscan teeth that were artificially filled.

Dr. Marten's paper is handsomely illustrated. The pictures show tombs and delineate the dentures described above.

CROWN WORK.

By Dr. A.M. Ross, Chicopee, Mass.

A Richmond crown although having advantages, is liable to fracture and then an entirely new piece of work is necessary, and the force necessary to split and remove the cap and pivot is often prejudicial to the future welfare of the root, and the expense of this work is beyond the resources of most persons.

In mounting Bonwill crowns he proceeds as if it were to be a How four-pin crown, up to the point of cutting off the extra length of screw post. This is cut shorter or left longer, according to the articulation after the crown is ready to set. The alignment of the crown is accomplished before grinding it; then a piece of Field and Mer's thin articulating paper, a little larger than the face of the root, is perforated in the centre and slipped over the screw. Serving as a guide in correctly jointing the crown with the root. The crown is then set with amalgam. The root may be branded very perfectly with coin gold, half the width of the band projecting beyond the face of the root. The cervical portion of the porcelain crown is then fitted inside the band and properly articulated. The rubber-dam is then easily adjusted, the crown is removed, and the face of the root is dried. The crown is set in a well mixed, thick oxy-chloride cement. When this is hard the excess is trimmed off, an angular pit is drilled into the end of the screw in which gold is carefully packed and extended upon the crown. Now in case of fracture of the porcelain, which will sometimes occur, neither post nor band has to be disturbed in the process of setting a new crown.

The writer commends swaged gold thimble-caps (Dr. E. O. Wilbur) for bicuspid and molars, in cases where a large mass of gold will not be a disfigurement, they are the best. After preparing the root internally, the external flange is carefully removed and the outside of the root slightly beveled, and an impression and bite is taken with modeling compound in oxy-chloride of zinc. Plaster is built upon and around this to represent surrounding teeth taken in the im-

pression. A selected crown should have the neck smaller than the circumference of the root. The model when trimmed is with the aid of a light planishing hammer the edge of the crown is drawn out on the arm of the anvil, and with file and engine bur the shaping to the root and the cutting away for the festoons is carefully and accurately done. A How screw-post is inserted, trials of the crown made over it until the crown is in its proper position and rests on the end of the screw and upon the beveled edge of the root. A fine vent hole is made over the screw in the crown. The crown is filled with oxy-phosphate and is pressed to position. The cement over the screw is subsequently removed, a pit drilled into the screw and heavy gold is packed into it. These caps being swaged up from a solid piece, the plate is drawn the most over the more prominent points of the die—the cusps—and it is a good plan to drop a little silver solder inside the cap over these thinnest portions before setting them.

The writer cites a case: A superior central incisor had its crown knocked off. A wood pivot tooth was replaced by a Bonwill crown. As this split away from the pivot a Richmond crown was tried. The following procedure adopted. Through the remains of platinum pivot and a nalgam, which was found in excellent condition, the root was drilled and tapped as if a How screw post was to be inserted. The root being banded and capped with gold, a gold screw two-thirds the diameter of opening in the root was selected: and wrapped carefully with bibulous paper to the thickness that allowed its easy passage into the root. The end that projected was inked, the cap applied, marked, removed, drilled and readjusted to the root: the screw just passing through the cap was waxed to place, the porcelain crown was ground to band and cap, waxed and the whole carefully removed invested in plaster and asbestos and soldered.

Herein lies the difference of this from the usual method: the band projects both above and below the cap. The portion in front is cut away in such a manner that the crown passes a little inside of it, making a better joint; the soldering is simply of the backing to pins, to the centre of the cap, and to the band at *each side*. A few hours after the crown had been set

(the threads of the tapped root and screw being well covered), with oxy-phosphate, which had fully hardened, the cap and root back of the crown were drilled, the opening in the root slightly dove-tailed and carefully filled with amalgam. with which the palatal contour was restored, and upon which there was a perfect articulation, the projecting band forming an excellent cup-shaped receptacle for the amalgam.

DEUTSCHE MONATTSCHRIFT FÜR ZAHNHEILKUNDE.

LEAVES OF THE COCA PLANT.

By Herr SCHNEIDER, Court Dentist, Plauen.

A plant growing wild in South America called *Erythroxylon Coca*, bears weakly aromatic leaves, smelling like tea, and having a slightly astringent taste. The natives of South America, who are passionately addicted to the enjoyment of the Coca, regard it as a means of nourishing and strengthening the muscles.

With us Coca was first used as a powerful analeptic tonic, and it differs from opium inasmuch as it does not injure the skin and bladder secretions, and that no dulling of the senses follows its exciting influence. Acceleration of the pulse, excitation of the muscular action, and of nutritive power, are some of the physiological consequences of the moderate enjoyment of Coca.

An ingredient of the Coca is an alkaloid which occurs in colourless and scentless prisms, which in water with difficulty, but easily become soluble in spirits of wine and æther. This cocaine has the peculiar effect on touching it with the tongue, of rendering it insensible to taste and feeling.

In 1862, Professor Schroff of Vienna discovered that Coca could make the mucous membrane of the tongue insensible and expand the pupils. Unhappily as no great consequences were attained by its internal use, this means was soon discredited and forgotten. In 1880 Dr. Von Aurep experimented anew with the Coca and discovered its local anæsthetic effects. Koller in Vienna, then happily thought that a substance which rendered the mucous membrane of the tongue insensible, would act similarly with the horny

cuticle, and covering membrane of the eye. He experimented on some animals; two drops of a two per cent. solution of muriate of Cocaine in the eye of a dog caused after a minute insensibility of the fore part of the eye. After ten minutes the conjunctive can be scratched, touched with a strong electrical stream, or cauterised with lapis infernalis, and the animal will not experience the slightest pain. Koller then tried the method on himself and some fellow practitioners and found that the eye could be disturbed with a darning needle and held with forceps without any pain being felt. Brilliant results were obtained in greater operations on the eyes, so that to-day Cocaine may be regarded as an invaluable local anæsthetic.

According to experience the use of Cocaine in dentistry must become very general, and even if it should not supersede chloroform or protoxyde of nitrogen, yet its use might make the extraction of a tooth almost, if not quite painless. Then narcosis would be more and more unnecessary. It also raises hopes in another direction. Who does not know the pain which often follows upon the extraction of a tooth, often worse than toothache itself, pain which remains not only minutes but hours, and sometimes days. It is now believed that Coca is a remedy for this. The use of the same by means of dipping a small sponge in the solution will stop it in from ten to twenty minutes. In conclusion, it possesses an invaluable property for the practitioner. How often has he been compelled to interrupt his work on account of pain in carious teeth, which he is obliged to stop with creosote. Will he not hail in the Coca a means of combatting the difficulty?

Dental News.

THE DENTAL HOSPITAL OF LONDON.

The twenty-seventh Annual Meeting of this Institution was held at the Hospital, Leicester Square, March 12th, under the presidency of Colonel Sir James McGarel Hogg, Bart. K.C.B., M.P., one of the Vice-Presidents. In the report, which was unanimously adopted, the Managing Committee

congratulated the Governors on the continued success and prosperity of the Institution; also on the great benefits which the Hospital continues to afford to the suffering poor, 38,304 cases having been treated during the year 1884 (a large number of them painlessly under anæsthetics), being 2,672 in excess of the previous year, and the highest on record since the opening of the Hospital. That in consequence of the still increasing number of patients it had been found necessary to provide additional operating chairs. That there is still £3,503 unpaid of the mortgage debt on the Hospital: and the Committee are compelled to make a further special appeal for the funds necessary to pay off this encumbrance, which presses so heavily upon the financial resources of the charity, and materially curtails the benefits it would otherwise be enabled to confer upon the suffering poor. The Charity is unendowed, and increased funds would enable it to greatly extend its usefulness.

[The above report reached us too late for insertion in our last issue.]

ODONTO-CHIRURGICAL SOCIETY.

The Annual Meeting of the Odonto-Chirurgical Society (Session 1884-85) was held in the Rooms, 30, Chambers Street, Edinburgh, on Friday, 13th March, at 2 p.m.—Andrew Wilson, Esq., L.D.S., President, in the Chair.

PRIVATE BUSINESS.

Minutes. Treasurer's Report. Election of Office-Bearers. Session 1885-86. Nominations.

GENERAL BUSINESS.

Papers on "The Missing Incisors in Man—which are they?" by Andrew Wilson, Esq., I.D.S.Ed.; and "Congenital Alveolar Fissure," by Oakley Coles, Esq., L.D.S. Eng., (London). The above Papers were illustrated by means of a Lantern constructed to project a representation direct from the model upon canvas, lent by Dr. Joseph Walker, L.D.S. (London).

An Exhibition of Microscopical Preparations of Dental Histology and Pathology, by means of the Lime Light Lantern; with Remarks, by G. Wilkie Watson, Esq., L.D.S. Ed.

The election of the following Office-Bearers for the session, 1885-86, took place: President, W. Bowman Macleod, Esq.; Vice-Presidents, Dr. W. H. Williamson, John A. Biggs, Esq.; Treasurer, Malcolm Macgregor, Esq.; Secretary, John S. Amoores, Esq.; Curator and Librarian, George W. Watson, Esq.; Councillors, Andrew Wilson, Esq.; J. Moore Lipscomb, Esq.; James Mackintosh, Esq.; E. A. Cormack, Esq.

STUDENTS' SOCIETY OF THE DENTAL HOSPITAL OF LONDON.

ORDINARY GENERAL MEETING HELD 9th March, 1885.

S. C. BUCKLAND, Esq., Vice-President, in the chair.

The minutes of the previous meeting were read and confirmed.

The Chairman read a letter from Mr. H. Murray proposing the following motion of which notice had been given at the previous meeting.

"That a sum of money, from the funds of the Society, be devoted annually to procuring a group photograph of the members of the Society, and that such photographs be framed and hung in such room as the Council shall decide." This was seconded by Mr. King, but strongly opposed by Messrs. England, Sexton, and Campion on the ground that the motion introduced a mischievous precedent in proposing to devote the funds of the Society to the gratification of the personal wishes of a portion only of its members; many members being now no longer students of the Hospital, and resident in different parts of the kingdom.

On being put to the meeting by the Chairman, the motion was defeated by a majority of nearly two to one.

The Chairman then called on Mr. W. M. Gabriel for his paper on "Reflex Facial Paralysis." (See page 301.) This was listened to with much interest and produced a short discussion in which the Chairman and Messrs. England and King took part.

After Mr. Gabriel's reply a cordial vote of thanks for his interesting paper was passed him on the motion of the Chairman, seconded by Mr. King.

The next meeting will take place on Monday, May 11th,

when Mr. Arthur King will read a paper upon "Dental Diagnosis."

MEDICAL SICKNESS, ANNUITY, AND LIFE-ASSURANCE SOCIETY.

A meeting of the Executive Committee of this Society was held on Wednesday, the 11th inst., at the residence of Dr. W. M. Ord, Brook Street, W. There were present: Dr. W. M. Ord, Dr. W. Clibborn, Dr. T. M. Dolan, Dr. De Havilland Hall, Mr. E. Bartlett, Mr. M. Greenwood, jun., Mr. J. Brindley James, Mr. F. Wallace, Mr. S. W. Sibley, and Mr. E. Noble Smith. It was reported that ten new proposals had been received in the four weeks since last meeting, making the total to date 651. The balance in favour of the Society was stated to be £4,689 2s. 10d.; and as the quarterly premiums were now being paid, this might be expected to be increased to about £5,400 in a few days. During the four weeks £62 8s. had been disbursed for sickness-pay, and it was stated that already claims had been paid for sicknesses of a widely-varying nature—from severe accidents to the ordinary forms of temporary disablement. The rate of sickness up to the present, however, compared very favourably with the data on which the tables were founded. The question of further investment of funds was considered, and it was decided to invest from £2,000 to £3,000 at a good rate of interest on the security of borough rates. All information as to this Society may be obtained of the Secretary, Mr. C. J. Radley, 26, Wynne Road, Brixton, S.W.

IMPORTANT PROSECUTION UNDER DENTISTS' ACT.

A case of considerable importance to the medical and dental professions was tried before Sheriff Henderson, at Cupar, Fife-shire, on Friday, 6th March. The summons set forth that Alexander Ross French, formerly a confectioner in Dundee, and now or lately residing at 193, South Street, St. Andrews; had contravened the Dentists' Act, 1878, in so far as he did, between July, 1884, and January, 1885, unlawfully take or use the name or title of "Dr." French, Dental Surgeon; by

having the same on the door plate, lamp, and sign board, at his place of business in St. Andrews; and also with unlawfully using the names or titles of "D.D.S." "Resident Surgeon," "Dr.," "Dental Surgeon," by publishing the same in newspapers and on handbills; and circulating the same in St. Andrews and elsewhere. Mr. Peter Fleming, solicitor, St. Andrews appeared (?) for the Defendant. The accused pleaded not guilty. Mr. James Robertson, solicitor, Edinburgh, stated that he was the Registrar of the Branch of the General Medical Council, and exhibited the Dentists' Register for last year. The name of Alexander Ross French did not appear in it. According to the Dentists' Act, if a name did not appear in the Register that was sufficient evidence that a party had not passed. The secretary of the Scottish Branch of the Dental Association stated that he was the complainer in the action, and that the Association had been established to carry out the spirit of the Dentists' Act. It was not the case that parties with sufficient means could buy qualifications for the practice of dentistry. The fees for the whole curriculum would be between £70 and £100. James Robertson, Joseph Graham, and J. Forrester, St. Andrews, proved the use of the titles. The accused read a long statement in defence, in which he pointed out that he had advertised that he was not a registered dentist. He maintained that the titles he had used did not come under the jurisdiction of British law. He concluded by stating that it was next to impossible for a working man to make his son a dentist, as the fees were so high. The Sheriff observed that it was impossible for him to do otherwise than convict for the offence. It was a clear contravention of the Act. It was not for him to advise in such a case, but the accused would find it a very difficult thing to set himself up against an Act of Parliament and against society. In answer to the Sheriff Mr. Fleming stated that the expenses had been between £10 and £20. His lordship then fined the accused £10, with the alternative of seven days' imprisonment. The accused was allowed three days to consider whether he would pay the fine or go to prison. He stated that he would appeal against the decision to a higher court.

Correspondence.

[We do not hold ourselves responsible for the opinions expressed by our correspondents.]

PROPOSED FINE ART EXHIBITION AT CAMBRIDGE.

To the Editor of "The British Journal of Dental Science."

SIR,—At the last meeting of the Representative Board I obtained permission, subject to certain conditions, to bring forward at its next meeting a definite proposition to the following effect:—"That arrangements should be made at the Annual gathering of the British Dental Association at Cambridge in August, to hold an Exhibition of Artistic Work (other than professional) executed by practitioners of Dentistry." The exhibition will be on behalf of the Dental Benevolent Fund, and is intended to include paintings in oil and water-colour, statuary, subjects modelled in clay or cast in plaster. Wood, bone, and ivory carving. Artistic work of all descriptions in the precious metals, brass and iron, including under the two latter metals, Repoussé and wrought work. Mosaic in wood, stone, glass, or ceramic, and any other side product of the technical and artistic skill that may be within the compass of the student or practitioner of Dental Surgery.

My aim in making this suggestion is two-fold; first, to get money (by charging for admission) for our Fund; but chiefly to demonstrate to those who care to try and understand, that the direct influence of our professional training is broad, sympathetic, and artistic, and that the pitiful idea of plugging and extracting teeth being the limitation of our capabilities is a distinct error. If those who sympathise with this project will write and tell me what they will do to help, we might ere long have a meeting to consult over the details, and be of use to one another in helping to make this unique exhibition an unqualified success.

Your truly,

OAKLEY COLES.

Wimpole Street, W., March 23rd, 1885.

OBITUARY.

MARGETSON. L.D.S., OF DEWSBURY.

In the death of Mr. Margetson, of which a notice appeared in the February number of this Journal, the profession loses one more of those of its members who have by their simple and work helped to rescue Dental Surgery from the clutches of empiricism and place it in its present position as a part and science. Margetson commenced practice at Dewsbury when a dental work-room was jealously guarded from the presence of all strangers, and (with a few bright exceptions) suggested to themselves the little knowledge they possessed of the secrets; when dental materials were scarce and of poor quality, and special tools and dental literature almost unknown. Mr. Margetson finally settled, in the summer of 1841, at the Roscoe House, Dewsbury, and in the face of adverse circumstances and disappointments, succeeded by hard work, abnegation and unvarying gentleness and courtesy, combined with firmness, to gain the respect and confidence of one of the largest clienteles enjoyed by any man in Yorkshire. He continued in full practice until the state of his health—which no doubt had been impaired by too great application to work—compelled him to seek relief from operative work in 1880, and finally severed his connection with the profession in March, 1884, as at this time several attacks of paralysis had rendered him helpless. In 1842 he became a member of the then existing, 'College of Dentists of England.' In 1863 he took the L.D.S., and in the same year was elected a member of the Odontological Society, and had a seat in the Council in '78 and '79. Although his part in most of the movements for the advancement of the profession, his retiring disposition and dislike of publicity—which amounted almost to a fault—prevented him from coming before the profession. His whole soul was, however, in the work which he had set himself to do, and he always adopted any new mode of treatment, or instrument, which after due consideration he thought an improvement either for the relief of suffering or the better preservation or replacement of natural organs. He was one of the first to com-

mence the administration of nitrous oxide in the North of England (in the summer of 1868) and did much to encourage its use by other members of the profession in conjunction with the late George Barth and Messrs. C. J. Fox. and Brain. He was one of the early advocates in the Dental Reform movement, which led to the passing of the Dentists' Act, and always took great interest in the advancement in the British Dental Association and its branches, although prevented by ill health from attending their meetings. On the 26th of January last he was again attacked with paralysis and remained unconscious until his death on the 29th, and was buried on the 31st in the country churchyard of Woodkirk, as quietly as possible, according to his wishes, and in a manner consistent with his life.

MONTHLY REPORT OF CASES TREATED AT THE DENTAL HOSPITAL OF LONDON.

FROM FEBRUARY 1st TO FEBRUARY 28th.

Extractions	{ Children under 14.	372
" "	{ Adults.	816
" "	{ Under Nitrous Oxide	430
Gold Fillings		240
White Foil ditto		10
Plastic ditto		780
Irregularities of the Teeth		191
Miscellaneous Cases		396
Advice		142
		<hr/>
		3377

ARTHUR KING, House Surgeon.

DENTAL HOSPITAL REPORTS. NATIONAL DENTAL HOSPITAL.

MONTHLY STATEMENT OF OPERATIONS FROM FEB. 1st. TO FEB. 28th.

Number of patients attended	1564
Extractions { Children under 14	391
" " { Adults	488
" " { Under Nitrous Oxide	420
Gold stoppings	56
Sheets of Gold used independent of Pellets	
Other Stoppings	643
Advice and Scaling	267
Irregularities of the Teeth	194
Miscellaneous	163
	<hr/>
TOTAL	2622

ISIDORE FREDERICK PRAGER, House Surgeon.

British Journal of Dental Science.

No. 415. LONDON, APRIL 15, 1885. VOL. XXIX

CONGENITAL ALVEOLAR FISSURE WITH ITS ACCOMPANYING DENTAL CONDITION.*

By OAKLEY COLES, London.

It is proposed in the present paper to deal with the consideration of 31 cases of congenital fissure of the alveoli and hard palate, occurring in my own practice.

The numbers given will correspond with numbers attached to the models.

Following the example of Dr. Albrecht and Professor Turner, I shall speak of the tooth placed anteriorly to the true canine on the side where the fissure occurs as the pre-canine tooth, though I do not by this wish to admit the acceptance of the theory that man has ever had, normally, six true incisor teeth. For simplification of comparison, I shall follow the order taken in the valuable paper by Professor Turner, and describe, first, left alveolar fissure; secondly, right alveolar fissure; and thirdly, double alveolar fissure. I shall endeavour as far as possible to avoid coming to any definite conclusions. The views put forward are so interesting and yet so greatly at variance with much that has hitherto been held as a satisfactory explanation of the origin of fissure in the alveolar region, that it seems to me desirable we should for the present content ourselves with the accumulation of facts, rather than attempt to settle the question at issue by any premature generalisation.

In speaking of right and left I shall always refer to that of the patient and not of the onlooker.

FIRST SERIES—LEFT SIDED FISSURED ALVEOLI.

Model 11.—*Case 1.*—Left-sided alveolar fissure, permanent central incisors, and first permanent molars erupted. Four temporary pre-molars, and two temporary canines in normal position, no evidence of temporary or permanent lateral on

* A paper read before the Odonto-Chirurgical Society of Scotland.

right side, small pre-canine in process of eruption in the left maxillary bone.

Model 22.—*Case 2*.—First permanent molars, right permanent central and lateral incisors erupted, four temporary molars and two canines persistent, pre-canine partially erupted on left side.

Model 16.—*Case 3*.—Dentition transitional, well erupted pre-canine on left side.

Model 21.—*Case 4*.—Permanent molars and bicuspid erupted, right central and lateral incisor and canine in position, left apparently temporary, canine persistent, well developed pre-canine, no evidence of left central incisor.

Model 27.—*Case 5*.—Dentition transitional, first right and left bicuspid in process of eruption, right and left canine in process of eruption, right and left central well-developed, right lateral rudimentary in form, no evidence of pre-canine on left side.

Model 18.—*Case 6*.—Adult dentition, two bicuspid and canine on left side normal in form and position, well-marked pre-canine on left side. The dentition on the right side apparently irregular in character.

Model 26.—*Case 7*.—Adult normal dentition, well-marked pre-canine on left side.

Model 19.—*Case 8*.—Adult normal dentition, crown of pre-canine on left side apparently excised.

Model 13.—*Case 9*.—Adult dentition, no pre-canine on left side and no left central incisor.

Model 23.—*Case 10*.—Adult dentition, no pre-canine on left side and no left central incisor.

Model 17.—*Case 11*.—Adult dentition, no canine or pre-canine on left side, and no left central incisor.

Model 14.—*Case 12*.—Immature dentition, no right canine, indications of left canine and pre-canine, in process of eruption.

Model 28.—*Case 13*.—Adult dentition, no pre-canine on left side, and no left incisor.

Model 29.—*Case 14*.—Adult dentition, imperfectly formed teeth, no pre-canine on left side, and no left central incisor.

Model 15.—*Case 15.*—Immature dentition, no pre-canine, permanent canine apparently in process of eruption.

Model 24.—*Case 16.*—Adult dentition, indications of two teeth on the left side in the canine region.

Model 20.—*Case 17.*—Adult dentition, canine on left side, no indication of pre-canine.

SECOND SERIES.—RIGHT-SIDED FISSURED ALVEOLI.

Model 1.—*Case 18.*—Adult dentition, canine on right side, pre-canine erupted in the palate, but at the margin of the cleft no right central incisor, and one bicuspid missing on each side.

Model 1.—*Case 19.*—Adult dentition, canine on right side, pre-canine erupted in the palate, but at the margin of the cleft, right central incisor in normal position.

Model 9.—*Case 20.*—Adult dentition, canine on right side, pre-canine erupted in the palate at the margin of the cleft, right central present but semi-rotated.

Model 6.—*Case 21.*—Adult dentition, canine on right side, no pre-canine, no right central incisor, left lateral incisor rudimentary in character.

Model 10.—*Case 22.*—Adult dentition, canine on right side, pre-canine uncertain, right central present.

Model 2.—*Case 23.*—Adult dentition, canine on right side, no pre-canine, no right central.

Model 4.—*Case 24.*—Adult dentition, canine on right side, pre-canine excised, erupted in the palate at the margin of the cleft, no right incisor, two bicuspids missing.

Model 7.—*Case 25.*—Adult dentition, canine on right side, pre-canine possibly in the gum, right central incisor present.

Model 4.—*Case 26.*—Adult dentition, neither canine nor pre-canine erupted, no right central, left central excised.

Model 5.—*Case 27.*—Adult dentition, canine on right side, no pre-canine, no right central, left lateral apparently extracted from outside of dental arch.

THIRD SERIES.—DOUBLE ALVEOLAR FISSURE.

Model 30.—*Case 28.*—Adult dentition, canine on each side in normal position, pre-canine on right side normally placed in dental arch, pre-canine on left side erupting outside of dental arch.

Model 23.—*Case 29.*—Adult dentition, canine on each side, pre-canine on left side in dental arch but not fully erupted, pre-canine on right side imperfectly erupted outside dental arch.

Model 32.—*Case 30.*—Adult dentition, canine on each side, pre-canine on left side fully erupted in dental arch, condition of right side uncertain.

Model 31.—*Case 31.*—Adult dentition, canine on each side, no pre-canine.

OBSERVATIONS.

1. It will be observed that there is not a single instance of fissure of the alveoli occurring between a true lateral incisor and canine on either side of the mouth.

2. That in five out of ten cases of right-sided fissure the right central incisor is missing.

3. That in eight out of seventeen cases of left-sided fissure the left central incisor is missing.

4. That in five out of seventeen cases of left-sided fissure a pre-canine tooth is clearly present.

5. That in four out of ten cases of right-sided fissure the pre-canine is clearly present.

6. That in two out of four cases of double alveolar fissure a pre-canine is present on each side, and in a third case, on the left side.

7. That there is not any sufficient evidence in any case of increase in the number of teeth in the pre-canine region, whilst there is distinct evidence in some cases of the reverse condition, also of imperfect development.

8. The evidence at present before us is quite insufficient for the purpose of arriving at any conclusion, whilst the seven models without any numbers attached will indicate the singular liability of the pre-canine region of the upper jaw to irregularity, of a purely dental origin.

9. The chief aims of observers for some time to come must be the examination of fissured alveoli very early in life, the careful dissection of the premaxillary bone in cases where it has been excised for the better treatment of hare-lip during infancy, and the collection of very accurate and carefully preserved models for the purpose of recording the exact condition of the teeth at various ages.

The author of the paper apologises for the condition of the models submitted, but as in the original they have all been in use for the fitting of some form of artificial palate, their state will not be a great matter of surprise to those who examine the casts. They may at least be recognised as possessing the merit of being untouched so far as restoration is concerned.

THE TEETH OF CHILDREN.*

By Dr. W. GEORGE BEERS, of Montreal, Canada.

Once upon a time I thought I knew something of the predisposing causes of dental caries ; but the more I read and observe, the more disposed I am to change dogmatic points of exclamation for modest marks of interrogation, and to sit as a humble hearer rather than to pose as presumptuous preacher. Indeed, I now know that I know less than I was sure I knew when I was in my first year of practice. In respect to the increasing decay of children's teeth. I feel every day such a growing degree of ignorance that I expect soon to exclaim with the ancient philosopher in search of knowledge : "All I know is that I know nothing !" It is amazing how the omniscience of a newly-fledged dentist disappears as he gets riper experience. Dental theories in science and practice, like the toy blocks of children, seem in our day to be set up only to be upset. Thought, which once crept, now flies so fast,

"We think our fathers wrong, so wise we grow ;
Our wiser sons no doubt will think us so."

I have a very keen sense of the risk I run in speaking here upon a subject so trite, but I venture to do so that I may get, not that I expect to give, information, and because I believe that it is a subject of the gravest importance, even should it be sneeringly treated as "milk for babes." I cannot, after the open confession that I have made, expect to tell you anything new, but, as Seneca says, "a thing is never too often repeated that is not sufficiently learned." Moreover, if we all wait till we are able to contribute something purely original, many of us will never contribute anything ; and if

*A Paper read before the New York Odontological Society and reported in the *Dental Cosmos*.

we are debarred from the discussion of subjects familiar to us all, we may rarely discuss anything, because everything seems to have been discussed.

It is probably a perfectly safe estimate to make that in American and Canadian cities of fifty thousand people not a hundred native-born can be found between the ages of four and fourteen who have wholly escaped caries and premature loss of some of their teeth. If this ravage was to proceed in the same ratio, men and women would be edentulous by the time they were forty, were it not for the preservative skill of the dental operator. It is a fact we must recognize that, were it not for the services daily rendered to humanity by our profession in this country, the largest proportion of the adult population would be comparatively toothless. Is it not becoming identically the same with children, so that we may say, were it not for the services daily rendered to them, the largest proportion would lose at least the deciduous molars before they were five years old, and the sixth and twelfth year molars before fourteen? In fact, so common is the disease, even in Canada, that it has long been one of the popular superstitions we should to destroy, that the decay of children's teeth, is as much to be expected as their eruption; and the children themselves have been largely educated by bitter experience to look upon it as a fatality of childhood, and may reason about it after the manner of a curious epitaph over the grave of an infant:

"Since I was so quickly done for,
I wonder what I was begun for."

Supposing it could be proved that in our public schools the lobe of one ear, or the little toe of one foot, of every tenth child were becoming tender to the touch and diminishing in size, would it not cause dismay? Would not the public mind be agitated to deep inquiry if it were found that the hair of every tenth child was turning gray, or that crow's feet were marking their lines about their eyes? And supposing on the ear, the eyes, and the hair at birth, there were visible indications, such as there are so often so often at the eruption of the teeth, which predetermined decay, would we be satisfied with mere investigation of the exciting causes, or

would we not feel bound to search for causes in embryo in such a coincidence? Caries of the teeth means decay—death—as much as the graying and loss of the hair. Why should any part—the teeth any more than the hair—decay and die prematurely? Has it come to this that, we must accept early decay as an inevitable coincidence of their existence? Are we to believe that the teeth are the unfittest part of the body to survive, and that this trade-mark of death is impressed on the very embryo, and is to be carried in the mouths of otherwise healthy children from the time of their eruption?

I have long since lost all surprise and wonder why the teeth of adults decay. The surprise to me is how so many escape. What boots it if the wisdom tooth should become rudimentary in civilized races? What good is it? Why should we break our hearts over the caries of the teeth of adults who have preventives, preservatives and substitutes and think or do so little for those of children who are not able to suffer like adults, and who certainly cannot have the loss of natural teeth supplied? The only sincere surprise and pity I have left is for this caries of irresponsible children. Even the woman who expects pregnancy can make preparations against coincident or consequent dental affections. Half of the men who suffer disease and loss get just what they deserve. But it is not so with children, and I am anxious to have my gross ignorance enlightened, even at the cost of abandoning strong convictions. There must be something for mother, child, dentist, and physician to do which is not done.

The average baby is born into the world as toothless, though fortunately for its teething not so tough, as a turtle. Every other feature is presented in a recognisable form, pretty much as nature premeditates, whether perfectly or imperfectly developed. One can tell fairly well if the little bit of humanity is to have its mother's eyes, or, in spite of the preternatural snub, its father's nose, or if it is to be a new departure, or an old revival of the ancestral physiognomy. Whatever physical defect of eyes, palate, lips, or extremities is inflicted upon the child, whether congenital cataract, cleft-

palate, hare-lip, or club-foot, may be detected at birth. Nature however, loves the darkness in dealing with the teeth. She might have grown the teeth as soon as the eyes, and she might have put guards about a woman's nipples. We know the wisdom of the arrangement as it is; and one would suppose that the very invisibility in which she keeps the teeth would provoke more inquiry as to their healthy future. I know women who became physiologists when they became mothers; who went to work to study how the coming teeth were to come, with as much interest as they had ever studied the harmony of colours, or the superiority of wood or woollen for carpets. So it should be in every case. But I am not sure that parents would not learn more and care more about the teeth were they born like those of Marcus Curius, the Roman consul, who Pliny states had a full set at birth. Yet it is a fact that in many cases they are no sooner into the world than they are into trouble. Nature, as I said, forms them in the dark; and there, after birth, they lie in their secret chambers for the first five months, a hidden foe to the mother's rest and the little owner's peace; the puzzle of the ancient physiologist, who thought the pulp a worm; the despair of the old Greek pathologist, who attributed all infantile mortality to teething, and who declared that the cause of tooth-ache "is known only to God."

When we consider that nature is busy at work long before birth constructing the second set of teeth: that the enamel organs of the first permanent molars appear about five months before birth, those of the second molars three months before birth, and those of the dentes sapientiae fifteen or sixteen years before they erupt; that a child has, from its fifth year to the eruption of its first molar, forty-eight developed teeth, or the calcified germs of teeth in its jaws, and that the structural condition of both temporary and permanent is determined in embryo, we ought surely to realize the importance of study in this direction. If we accept the acid theory of caries, and especially associated with the softer character of the dentine and enamel of the deciduous teeth, we may assume that there is no more mystery as to the exciting causes in the teeth of children than in those of adults. But healthy

children, from two to seven years old, have not lived enough to be exposed to the principal exciting causes of caries. Or must we declare that just because of the softer character of their teeth, the exciting causes are more active? But, again, they are in the period of growth; nutrition is most energetic. Why is this period associated with decay? Allowing that in modern habits of life and diet we may find immediate causes these having nothing to do with structural conditions (and it must be admitted that predisposing causes and conditions exist, for which the child is in no way responsible). I would throw the main responsibility upon the mother, given that there is no existing or hereditary disease on the part of the father; and accepting the disturbance of the nutrition of the teeth during the intra-follicular evolution as now a very common coincidence, would seek in that direction for the first, and, most often, the only predisposing causes of caries. It would seem, too, as if in certain maladies the condition of enamel is invariably disturbed. So true are the embryonic and post-natal results of certain conditions of the mother and child, that it seems to me that until we have defined and laid down in some specific way the attendant risks to which tooth-development is subject, and discover how these risks may be governed, we are studying predisposing causes very much in the dark. We know that the breed of lower animals and the quality of plants and flowers may often be altered and improved. Is this to stop at mankind, or can we in any way influence the vital forces which govern the rudimentary genesis of the embryo and of the teeth? Can we do anything to secure molecular perfection; to feed germs; to prevent ultra-uterine disturbance; to grow good teeth as we can grow good geraniums; Have we any control of the embryo through the mother; Can we control nutrition—assimilation,—or are we to abandon that idea, take the teeth as they come to us in their steady decadence, and make no effort to grow better? Is dentistry to confine its science to its practice, or is there a day to dawn when the embryologist will be consulted, as the architect of the builder; and the teeth will have become so bad that he will find large occupation in study the idiosyncrasies and habits of people

who intend to marry, or who are just married, and advising and prescribing diet, habits, etc ?

Of late, there seems to be a disposition to question the value of administering phosphates during pregnancy and the formative period of the teeth. It is important to know if the system will resolve and appropriate certain elements to different uses ; to know if it will take up phosphate and carbonate of lime and magnesia, and direct them to the growing teeth. Nothing establishes truth like attacking it. It will stand if it is truth. So let us pitch into truth just to make it shine out. If what we have supposed to be truth is only fraud in disguise, this sooner we know it the better. It was a very hard pill for the old anti-amalgamites to swallow when they had to abandon preconceived ideas and admit that they had been trying to believe the black coating on the old material to be an injurious preparation of mercury, instead of what it was, an innocuous preparation of silver ; in other words, that they had been trying to believe what they had wished were true. Now, unless somebody can upset better than that what many of us believe as to the value of the phosphates, by giving analytical proof from actual experiment performed upon pregnant women and the fetus at various periods, or at least upon the lower animals ; unless someone can substantiate doubt by physiological and chemical proof that the formative period and the pregnant condition as regards the teeth cannot be modified by special nutrition I venture to believe that we possess sufficient evidence to warrant the theory that lime, furnished in such forms as will be easily digested and assimilated, does contribute to dense development and perfection of tissue. Is there anything unscientific or unreasonable in the assumption that we can feed the germ through the blood of the mother, when we know that through the mother's blood the embryo is fed ? And have we not analogous evidence in the animal and vegetable kingdoms to assure us that our creed is not founded upon guessing ;

Chemical analysis tells us what it is that gives the teeth their superior hardness over the bones, and what their condition is when they are defective. It seems to be the convic-

tion of histologists that once the enamel is formed it cannot be modified, as may be the dentine, which becomes denser by age. The structural character of enamel is, it is said, unchanged and unchangeable, except by external causes. We may not know all of the truth yet in this matter ; but we know that in the developement of the fetus lime is extracted from the tissues, and especially from the teeth, of modern mothers, and that this alteration in the latter goes on in the dentine so as to predispose the unchangeable enamel to some alteration whether structural or not. Do you not think that indirectly the enamel may be influenced through the blood of the mother, by the administration of the lime salts which are absolutely necessary to its nutrition ? It seems to me we know a good deal to encourage us. Chossat's experiments proved that by abstracting lime from food artificial softening of the bones in animals can be produced ; that life will not be sustained if food is deprived of its phosphates. We know that rickets, scrofula, and many other diseases, even difficult dentition, we owe some of their origin to the deficiency of lime and magnesia. We know that, during gestation and lactation, the phosphates and carbonates are usually insufficient for the demands of the mother, and every day we see the result in the softening and decay of her teeth. At no time of life are these so urgently needed as when two lives—one in embryo—have to be supplied through the one channel. We know that if we keep lime from fowls they will have eggs without shells ; that cows fed on land sown with bone phosphates will give richer milk ; that wheat, planted in earth deprived of phosphates, will soon die after it germinates ; that we cannot get flowers on peas which are sown in a soil containing no phosphates. We might confine this argument entirely to facts known as to animal life and diet ; and knowing all we know, though having to admit much ignorance, may we not continue to preach to our patients the gospel of lime ? as it not a fact that the debility from which so many pregnant women suffer is due to the waste or lack of this element, and that the evidence is more than circumstantial that direct and rapid changes have been induced by its supply ? If I knew enough, and had opportunity

I would like no better way of experimenting than to begin at conception, and test in a thousand cases the influence of lime upon the coming child as well as the mother. If what we know, or what we hope to know, is to be of any practical value,—and knowledge that cannot be made practical is better unknown,—we must do what we can do in the early months of pregnancy.

To be continued.)

SUPPLEMENTAL REPORT ON TREATMENT OF PYORRHŒA ALVEOLARIS, WITH NOTES ON EUGENOL AND SANITAS OIL.*

By A. W. HARLAN, Chairman.

Numerous letters of inquiry asking for more specific details of the treatment of pyorrhœa have shown the widespread interest in this subject which has been awakened by recent contributions to dental literature. These evidences of a desire to accomplish all that is possible by any method of treatment advocated have induced me to continue my labours in this direction. The experimenter must have a genuine enthusiasm, combined with patience and intelligence. The re-awakened activity in seeking to restore loose teeth to firmness in their sockets has shown that a new method of treatment was eagerly sought after to control the ravages of the disease under discussion. The writer is gratified to know that his efforts in the past have been so spontaneously recognised, and he here desires to express his acknowledgments for the words of encouragement so freely conveyed.

The mass of the profession are so likely to confound with pyorrhœa alveolaris salivary deposits on the lower incisors, or such deposits on the buccal, palatal, or lingual surfaces of molars, that it seems necessary to restate the fact—apparent to all close observers—that salivary concretions are only in slight degree, strictly interpreted, the cause of or associated with pyorrhœa, except as shall be hereafter alluded to. In many incipient cases a careful examination discloses the fact

*A Paper read before Section VI. on Pathology, Therapeutics, and Materia Medica, of the American Dental Association and reported in their Transactions.

that there is only a slight recession of the gums surrounding the necks of affected teeth ; in others none at all. In those cases recognised to be of longer standing may be observed a blunting of the septum of gum lying between the teeth, with a tendency on its part to bleed on slight provocation, especially between the molars and bicuspid. In all cases where the discharge of pus is abundant on pressure being applied, the loss is observed of more or less of the bony process surrounding the root of the tooth, its symmetrical outline disappearing irregularly. This accounts for the varying depth of the pockets. Where the process is thinnest normally there will be found the most extensive destruction of bone.

Pyorrhœa alveolaris is not a disease of old age any more than it is a disease of youth or middle age. I have seen it in at least one case as early as the ninth year, and several times before the sixteenth year. From the number of cases of true pyorrhœa recognised up to this time I am unable to say at what period of life it is most frequently observed. My personal experience leads me to think that more cases are to be found between the ages of twenty-five and forty-five, but I have no reliable data to establish this. The thoughtless and ignorant extraction of teeth by those not competent to observe, neglect to consult a dentist at the proper time, failure to impress those persons suffering with pyorrhœa by the dentist into whose hands they intrust themselves, lack of means to secure proper attention at the right moment, and other causes not necessary to enumerate, all tend to prevent even an approach to the truth. It is to the future that we must look for statistics of age, sex, and the condition of the general health, the teeth most likely to be affected, etc. Pulpless teeth, even in the few cases I have seen, do not escape its ravages. Uses of tobacco are not less liable to suffer than those who do not habitually use it. The worst cases I have seen were those where tobacco had never been used. Long-crowned teeth, slender teeth, teeth with small necks, and teeth which have been separated by files and disks and not properly cared for afterwards, teeth pretty generally free from extensive caries, teeth of mouth-breathers, are the ones most likely to be affected by pyorrhœa. Teeth which

have lost their antagonists early are not often affected. After the inception of the disease teeth which are normally even and regular in their appearance change position, become twisted in their sockets, spread laterally, protrude over the lower lip (the central and lateral incisors) and if a tooth should be extracted through thoughtlessness or ignorance, the contour of the mouth may be changed. The teeth may even overlap each other, or a tooth may be pushed out of line. It is not possible without taking too much space to say how many deviations of position have been observed.

The fact cannot be too strongly reiterated that the vast majority of cases of pyorrhœa are seen uncomplicated with salivary deposits. The writer is supported in this view by such observers as Black, Ingersoll, Witzel, Walker, and other who are well recognized as authorities. I have seen in a number of cases, salivary deposits on the inferior incisors and on the buccal surfaces of superior molars, yet the remaining teeth were found free from such incrustations and still the patient suffered from true pyorrhœa. Several cases have shown a tendency to the deposition of salivary calculus on certain teeth while undergoing treatment. The dentist not in search of these cases will frequently be deceived by the appearance of the gums, as not many cases present an inflamed or thickened margin; few cases are to be seen where the *ligamentum dentium* has completely lost its hold on the neck of the tooth, and fewer still where the gums present a pale, flabby appearance. Many cases are seen where the gum has a purplish colour, of various shades, corresponding to the outline of the packet beneath. Pockets may be seen on the labial surfaces of the anterior teeth before the destruction of the alveoli has begun. This statement is based on the examination of cases known to be in their incipency. The writer, having no desire to unnecessarily lengthen this paper, refers his interested readers to the undermentioned papers for various conflicting views on the pathology of pyorrhœa.*

*L. C. Ingersoll, "Alveolar Ulceration," Transactions Ill. State Dental Society, 1880. G. N. Black, "Phagendana Pericementitis," 1882. A. Witzel, "Infectious Alveolitis," *British Journal of Dental Science*, Feb. 1 March, 1882. J. Arkovy, J. Iszlai, J. Walker, W. H. Atkinson, Vol. III.

I do not pretend to discuss the causes of pyorrhœa at this time. Later I may have something to communicate on that subject.

TREATMENT.

Instruments. Experience has shown the necessity for possessing three probes of extreme delicacy for examining the pockets: first, for their depth and width; second, for detecting serumal deposits on the roots, and third, to discover the condition of the edges of the alveoli. The probes should be smooth-pointed, so as to not lacerate or wound the gums. Previous to using them the mouth should be thoroughly cleansed by syringing it with tepid water, and the gums dried with bits of paper, fibre link, or spunk. When the condition of the gums, roots, and alveoli has been ascertained, the plan of procedure must be determined. When there are salivary deposits they are to be removed at the first sitting and the patient furnished with:

R.—*Pinus canadensis* (white), ʒss.

Aquæ rosæ, ʒiijss.

Eugenol, mxxx.

M.

Sig. Use thrice daily for six days on a badger tooth-brush.

If there are more than four teeth affected I do not as a rule attempt to remove the serumal deposits (if such are present) from all at the first sitting, but reserve them for the second appointment, which must be made on the fourth succeeding day. Then include the four following, and so continue until the whole number have been thoroughly treated.

The instruments for the removal of serumal deposits which please me best are known as Cushing's scalers (made by The S. S. White Dental Manufacturing Co.). I have added to my set several others, so that with ten or twelve instruments—all necessitating a *pushing* motion—I am well equipped for the removal of any deposit on the root of a tooth, or in the bifurcation of a root. In addition to the above, two or three small spoon excavators are necessary for scraping and excising

Transactions International Medical Congress, London, 1881. A. W. Harlan *Dental Cosmos*, October, 1883. G. A. Mills, *Dental Cosmos*, 1879, *et seq* *Missouri Dental Journal*, 1882 or 1883, and others of a more or less fragmentary nature.

the edges of the alveoli, when it is not possible to accurately bur the edges with an instrument run by the dental engine. Where the teeth are widely separated, instruments of grosser calibre may be used. An ordinary hypodermic syringe with any approved point is also necessary. There should be points of at least three differing angles, in addition to one straight one; these points should not be too sharp. I use one syringe for injecting H_2O_2 *exclusively*. Two syringes are all that any one needs. The pockets are injected with H_2O_2 immediately following the removal of the deposits and the excision of the edges of the process. Any guaranteed peroxide of hydrogen may be used. It should be kept in a cool, dark place, in a glass-stoppered bottle which has been covered with a dark blue paper. One ounce is all that is necessary to keep in the case for daily use. Immediately following the injection of H_2O_2 , I use almost exclusively iodide of zinc in solution of water—from three to forty-eight grains to the ounce—beginning with the stronger solutions in the worst cases by injecting two to four drops in each pocket, and gradually decreasing the strength until the cessation of treatment. I have been using eugenol and sanitas oil, much diluted with oil of wintergreen or sassafras, in place of ZnI_2 , but I am not yet ready to report on their effectiveness.

(To be continued.)

REFLEX FACIAL PARALYSIS.

By W. M. GABRIEL, M.R.C.S., Eng.

(Continued from page 309).

Case III. This is related in a letter from a patient of this hospital, who happened to mention that four years ago his face was paralyzed and that he was cured by the extraction of some teeth. "In reply to your request in regard to my paralysis four years since. First of all I had toothache or neuralgia for three weeks. I wrote to Dr. K—— of Dublin, for his cure for neuralgia. Five minutes after the first application the pain was gone. Three months after, being exposed to the March winds I was taken with paralysis of the seventh nerve of the face. The doctor ordered me to go to Hastings for a change, where I stayed three weeks; returned no better.

After about two months of his treatment there was still no improvement. In the meantime a dentist called in to see me and asked me about my teeth, and I told him my two wisdom teeth on the bad side were hollow. He told me to consult the doctor as he thought they ought to be seen to. When I told him he said 'I wish you had told me that before, I had no idea you had any bad teeth ; have them drawn at once.' He next ordered the galvanic battery. I told that to the doctor and he recommended me to Dr. Sharkey, at St. Thomas's Hospital. and after about six applications I was pronounced cured."

The cause in this case may, I think, be fairly assumed to have been the carious teeth. Two other cases of facial paralysis caused by caries of the wisdom teeth are to be found in "Salter's Dental Pathology," and in the *British Dental Journal* for February, 1879. I shall not do more than mention these as they are somewhat similar to those I have related.

Case IV. The patient in this case was sent here from the City Dispensary, Watling Street, to have her teeth attended to. My notes are as follows : On the morning of Oct. 3rd, a friend of patient's noticed that her face was drawn to one side, and she herself then found that she could not close her left eye. When working is exposed to draughts ; is 19 years old, and an envelope folder.

Her taste was very deficient but is improved. Hearing and smell never affected. Her teeth have occasionally troubled her, but have not kept her awake at night. On Oct. 14th she came to this hospital and a temporary filling was put in the left upper first bicuspid, the nerve, which was exposed, being capped.

Present appearance Oct. 27. Face smooth and flaccid on left side, wrinkles and furrows less marked than on right. Left side is on a lower level and becomes still lower when smiling or talking.

The tip of the nose is in its normal place. Mouth is drawn to the right, this also increased by speaking, etc. Tears sometimes run overfall. Eye not looking inflamed but sometimes feels so. Saliva escapes from left side of mouth and

food accumulates between cheek and gum. When drinking no fluid escapes from nose. Swallowing not at all affected.

• *Action of muscles.* Cannot frown or wrinkle forehead well. Can close eye about half; eye moves upwards and inwards. Her mother says that during sleep her eye remains open. Cannot wink. Cheek blows out a little when talking. Labials are not impaired. Voice has no nasal twang. Cannot blow well and cannot whistle. Platysma, slightly paralyzed; soft palate, hangs down lower, reflex abolished; uvula, curved to right and backwards; hearing, no abnormal perception of low notes; taste, salt and sugar better tasted on right, but taste is now much better than it has been: smell, (tested by chloroform) diminished on left.

Oct. 27th. Says tooth stopped Oct. 14th has troubled her since. I removed the gutta-percha from the left upper first bicuspid and seeing that the nerve in it was exposed extracted the tooth. Subsequently the left upper wisdom, the right upper second bicuspid and second molar stumps were extracted. The left lower first molar and right upper first molar were filled with gold and amalgam respectively.

Nov. 22nd. Face improved. Taste completely recovered. No food now collects by gum. Can close eye about a quarter, whistles a little better, can wrinkle forehead and frown much better.

Dec. 1st. Can quite close eye but not so firmly as right. Angle of mouth still a little lower.

Jan. 15th. Writes that face is quite well with the exception of its feeling a little weak.

The paralysis in this case may have been due to the teeth. Patient herself and Mr. Mivart, the surgeon to the dispensary, think that improvement was greater when the teeth were attended to.

Case V. This, although not a case of paralysis, is somewhat similar to the one following, to which it forms, I think, a fitting introduction inasmuch as the symptoms came on after extraction.

Dr. Lauder Brunton, who was the patient, records his case in a paper on "Nervous Diseases connected with the Teeth," read before the Odontological Society. He says. "The eyelid

may be affected reflexly from the teeth. Sometimes dental irritation may cause motor spasm and at other times paralysis. A year or two ago I had the stump of a bicuspid tooth removed from the right upper jaw. Almost immediately after the extraction I noticed a constant spasmodic twitching in the right eyelid which I was utterly unable to restrain. This lasted all the time the wound in the gum caused by the extraction of the stump was open, but it ceased as soon as the gum had healed and has never returned."

Case VI. This, I think, the most interesting and certainly the most important for us to remember as dental surgeons. The symptoms in this as in the last case, came on immediately after extraction instead of extraction being the cure.

The case occurred in my father's practice and the following notes I took a day or two after seeing the patient.

Oct. 14th. Patient is a healthy looking, well-made man, by occupation a Custom House officer. He is single, and 27 years of age. Has been in perfect health, was not out yesterday evening, was on board at his duties at 4 a.m., this morning; this is not an unusually early hour with him. Knows of no exposure to draught. About 12 a.m. gas was administered and the left lower molar and wisdom stumps were extracted.

Patient says that after this operation his right cheek felt stiff and that this sensation of stiffness never went off. Whether this is to be explained by the stretching of his mouth by the gag, I don't know, this was the explanation naturally given to patient when he complained of this feeling after the first administration. Patient, however, says it did not feel like this. As patient has very little time at his disposal and cannot often get leave of absence, at 3 p.m. gas was again administered and the other stumps removed; they were left upper molar, right upper, and right first lower molar. The right upper wisdom was not removed nor was any attempt made to do so. After patient recovered he felt the stiffness, as before and on looking into the glass he saw that he could not close his right eye, and that his face on that side was paralyzed. He says that his face felt as if "stuck all over with glue." I then saw patient for the first time, the paralysis of the face was most marked.

His face on the right side was flaccid and smooth, the cheek and below the eye appeared rather flattened, sensation unimpaired. Cannot frown or wrinkle his forehead at all.

His eyelid he could by an effort just move, the eyeball rolling up to meet it. He smiled, etc., on one side of his face only. Could whistle a little, just making a sound. The masseter was not at all affected showing that the fifth was not involved in the paralysis. Hearing not abnormally acute, no alteration in taste, uvula in middle line, says that after second operation could not spit out properly.

Oct. 16th. Writes to say that he feels better but that his face is no better.

19th. The right side of the face still flat but he can wrinkle forehead, frown, and close his eye better. He is under the care of a doctor who has ordered him to remain indoors ; frequently use hot water fomentations inside and outside his mouth and has given him liq. strychniæ and tinct. ferri. perchlor. Has certainly improved. Complained to-day of twitchings in his face ; this he also noticed when I first saw him.

29th. Came to London to-day ; says his doctor and he himself are not satisfied with his progress ; I myself find him much better. He can all but close his right eye and all the other muscles are much improved. Could not to-day either see any deviation of uvula. Pharyngeal reflex unimpaired.

30th. Dr. Steavenson, electrician to St. Bartholomew's Hospital, was good enough to see patient at my request. Attempted to test muscles but on account of patient's nervousness only succeeded in showing that orbicularis palpebrarum acted well to interrupted current ; thought that improvement for the time (as described by me) was good, and that electricity was not needed for his recovery. Could not understand how the removal of the teeth could cause the paralysis, thought it more likely to be a coincidence.

Jan. 18th. Patient's face has quite recovered.

(To be continued.)

British Journal of Dental Science.

LONDON, APRIL 15, 1885.

ENGLISH DENTISTRY AND ITS CRITICS.

It was Robert Burns who, with his usual keen insight into man's nature, wrote:

“ Oh wad some power the giftie gie us,
To see oursels as ithers see us ! ”

It is ours to act upon the hint, and looking abroad learn what the outside world has to say upon us and our doings. Perhaps we should not accept too readily censure or praise; perhaps it were wise to hug the truth that sour grapes tempt not the hungry fox, nor does the honeyed adulation of fools build up substantial fame. There is no question that to the average mind criticism is easier than *bonâ fide* research, and when criticism takes the form of mere hole picking and sneers, the ease of its production becomes phenomenal. But criticism, whether good, bad or indifferent, can scarcely be other than beneficial; it brings home to us that we are not more perfect than our neighbours, and may even assure us that we are less so. In an unvarnished tale the correspondent to the *Dental Practitioner* gives his editor the result of his observations upon English dentists and English dentistry. We offer the cream of this gentleman's strictures, using his own words or their abridged equivalents. “In practices of any dimension, a mechanical dentist and one or more boys whose services are secured at a nominal sum are kept. They have charge of the prosthetic branch, the operator only taking the impressions and wax bites (and inserting cases when completed). The word laboratory is not used here [*i.e.*, London], and I think under the circumstances ‘workshop’ is the most appropriate word to use.” This imperfect arrangement in the ‘workshop’ prevents ‘artistic results’ being arrived at. Indeed ‘such a slovenly procedure must fail.’ This we are told. Conceding that “some of the older dentists were good mechanics,” the correspondent

credits English dentists with a marked *penchant* for "metal plates." These with their "wires," "bands," "stays," "vandykes," "swivels," "clasps," "springs," etc., excite his unfavourable comment. We gather hope when we are told that there are "a few honest exponents of prosthetic dentistry," but the hope is short-lived, for the admission is at once capped by the statement that these few honest men wholly fail to accomplish any work, save such as might have been turned out by a "Steam Dental Co." The epilogue runs:

"There seems to be a tendency in all old countries to be satisfied with following in the ruts of the musty past, this truism is quite applicable to England, and painfully so of dentistry as practised here; and one fact not very cheering is the apathetic manner in which the people submit to antedeluvian practice, while they support with generous fees the despoilers of their natural organs."

"The only thing to be done, I suppose, is for the earnest few to work and wait; but the millenium of dentistry, in so far as this country is concerned, appears to be very, very distant, and ere it arrives you may hear again from, &c."

Let us pause and see what this all amounts to, and sift out the moral of this onslaught upon our profession, one, even if hailing from an anonymoussource, is yet worth the considering and combatting. To persons whose heads are not turned by the excitement incident to those who ride atilt against wind-mills, there does not seem very much of a tangible nature in the remarks we have quoted. In the question of the employment of a mechanic, and supplementing his services with those of boys secured at nominal salaries, there is really nothing worth noting. It is too well known to persons who are acquainted with English dentists to need argument, that this statement is simply false. That skilled workmen are made use of is a fact, and as, many are either Americans or have studied in America, it seems extraordinary that the work turued out is so beneath contempt. And then again with regard to prosthetic dentistry, can any statement be more grossly inaccurate than that which pretends that the practitioners of prostheneics are few, and are incapable of doing

what they profess? America has, and we think justly, been credited with much of the advance of modern dental surgery, while all save the crassly ignorant recognise that English dentists have done fully their share not only in furthering the scientific basis of their subject, but in raising the tone and status of their profession. It is remarkable when one considers how few are the English dentists whose means permit them to pursue their subject from a scientific standpoint, that so much excellent work and so much important research has been undertaken by them. There is less flourish of trumpets, less push, and we might be permitted to add, less "palaver" on this side the Atlantic, but is there really less genuine work accomplished? Is this old country so wedded to the superannuated ways of her youth that she cannot seize upon and make her own, modern improvements and modern methods? Surely when we find Americans asked to speak before our Societies, and their ideas courteously but vigorously commented upon, there cannot be any unwillingness shown to hear even the most *outré* opinions ventilated.

Practising dentists in this country, whose procedure can be estimated as types of our practice, are all familiar with American methods, and if they do not exclusively follow such methods it is simply because they judge them not the best, and in this they are very well fitted to judge, since they habitually try both sides of the question. It is absurd to suppose that English dentists are conservative. The profession has during the past few decades shown itself positively revolutionary. It has been our custom to welcome all novelties, and to discard mere puffed rubbish, while we have retained and incorporated whatever modes of procedure promised a chance of usefulness and success.

It is noteworthy that while not so long ago American work was eagerly sought after and keenly competed for, at the present time English dentists find their hands fortified by the goodwill and respect of the laity, for whose benefit they incur so much drudgery and toilsome labour.

SALICYLATE OF SODIUM A CURE FOR NERVOUS HEAD-ACHE.—Hourly doses of from gr. x. to xv. are said to afford great relief; even single doses effecting a cure. It is said that the salicylate is better than quinine or morphia. Probably the ammonium salt would prove more efficacious than that of potassium; we suggest;

R	Amm. salicyl	gr. x.
	Sp. amm. aromat.	ʒss.
	Ag. camph.	ʒj.
		M—ft.

PAINLESS EXTRACTION OF TEETH.—Dr. N. J. Hepburn, of New York, communicates to us (*The Independent Practitioner*) the following method for the painless extraction of teeth. It has been used in some portions of Enrope for a long time, with great satisfaction: Dilute the tincture of Cannabis Indica made from the purified extract, with from three to five parts of warm water. Rub this over the gums with the finger for a short time, and then dip the warmed beak of the forceps in it before their application to the tooth. [Yes: it has been used in some parts of Europe for a long time. Mr. Aaronson published the method in our pages as far back as Nov. 1884.]

A CHAIR OF DENTAL SURGERY AT VIENNA.—We learn from the *Oesterreichisch Ungarische Vierteljahrsschrift für Zahnheilkunde*, that a Professorate of Dental Surgery is contemplated with an Institute to be devoted solely to Dental Surgery.

COLLECTIVE INVESTIGATION IN DENTAL DISEASES.—Dr. Taft has we are pleased to see recognised the great importance of this subject, and as earnest of his approval of an editorial of ours, has reprinted it *in extenso* in the *Dental Register*. By a slip the source from which the selection was taken has been omitted, but it is obviously an oversight. We shall draw attention again to this burning question, but meanwhile we may say that a leader will be found in our contemporary, *The Journal of the British Dental Association*, which deals with the subject much in the lines we laid down for ourselves in December 1st ult.

THE DENTAL REGISTER.—Dr. Betty under that inspiring heading “Salmagundi,” favours our publishers with the appended neat little paragraph:—“The publishers of the *British Journal of Dental Science* announce on their card that their journal is the ‘*oldest established dental journal in the world.*’ Shades of Ananias. Where does the REGISTER come in? The *B.J.D.S.* was established *twenty-seven* years ago, while the REGISTER issued its first number in 1847, and has since continued to carry on the good work. The publishers of the *B.J.D.S.* would better study the chronology of the profession a little before they make any more such rash statements.” Need we say that we have always regarded the *Dental Register* as being “pre-historic.”

DEATH UNDER CHLOROFORM.—A man aged thirty-nine, died last week in the Birmingham Workhouse Infirmary, whilst under the influence of chloroform-vapour, which had been administered to him for the performance of an operation for the cure of a subclavian aneurysm. An inquest was held, and a verdict was returned of “death from chloroform, properly administered.” As usual in these melancholy cases, a life is lost, and we who survive have not been advanced one jot either in knowledge or in experience. It is, doubtless, very important that the administrator should come off with an unimpeached professional character, but it is also highly desirable that the purely scientific aspect of the matter should be enquired into.

WHY DID HE DIE, from chloroform? Narcosis and the chloroforming was efficiently performed, answers the crowner’s henchman. We, however, need more. We ask that each case should be duly enquired into by experts, and its medico-legal and physiological aspects carefully weighed. If this were done, there would sooner or later be arrived at some hint or clue to the further elucidation of this very sombre subject.

Literary Notices and Selections.

THE PRACTICAL USE OF COCAINE CHLORIDE IN DENTAL SURGERY.

By J. P. CARMICHAEL, D.D.S., Milwaukee, Wis.

There has been of late a great deal of interest manifested in the application and effect of cocaine in minor surgery. No sooner were its anæsthetic properties known to the medical world, and its physiological action to a certain degree established, than its employment in dental surgery began to engage the time and attention of dentists, many of whom, in their zealous endeavours to obtund pain in sensitive dentine, entirely overlooked the physiological effect and natural properties of the drug, which had already been demonstrated by its action on the eye and throat.

The most satisfactory results are obtained by its application to moderately vascular tissue, or at least to such as is susceptible of easy penetration---its action having a tendency to render the parts anæmic, thereby indicating that a fairly active circulation is necessary for the attainment of its highest anæsthetic effect.

It thus becomes apparent to the most casual observer that no immediate results may be expected from its use alone on so non-vascular and dense a structure as the dentine of a tooth, to which nearly all dentists seem to have directed its application, rather than to the structure most susceptible to its influence, the gum and connective tissue, the seat, it can safely be asserted, of three-fourths of the pain experienced in dental operations. Therefore, we need not expect, for the present, any marked results towards the alleviation of pain from the use of cocaine upon sensitive dentine, unless it can be combined with some drug of more actively penetrating qualities. In this connection may be mentioned a number of minor but painful operations, hardly noticeable to the operator, but sources of great pain and irritation to the patient, rendering long sittings exhausting, from the effects

of which it sometimes takes days for a highly sensitive lady or child to recover. Among others may be cited the tying of the ligature about the neck of a tooth, to support the rubber-dam, which in many instances causes more pain than the preparing of the cavity for filling. Especially is this true where it becomes necessary to press upon a very sensitive and swollen gum to reach the cervical border of a deep-seated cavity; likewise, where the removal of overlapping portions of the gum is rendered necessary; also the cleaning of and removal of tartar from teeth where the gum is inflamed and sensitive. These and other operations of a like nature, which it is needless to specify, may be rendered entirely painless by the proper application of this valuable drug. The relief of pain in such cases is a boon to patients and a comfort to the operator, capable of being appreciated only by those in daily attendance upon operations in the mouths of nervous people.

A brief general description of this interesting plant, and of its active principle as used in solution, would not be amiss. Coca was regarded as a divine gift by the aborigines of South America---as a panacea for men's misfortunes and infirmities---making the sad gay and cheerful, the weak strong, and appeasing the cravings of an empty stomach. The labourer, after chewing a quantity of the leaves, goes cheerfully to his task, and thinks not of hunger so long as the influence of the drug lasts. It has a bitter taste, and operates as a stimulant, producing a general excitation of the circulation, nerves, and muscles, and increasing both mental and physical vigour. If used to excess it causes delirium. Unlike alcoholic stimulants, its use is not followed by depression. An erroneous idea seems to have been entertained by some as to the preparation of the drug, its solubility, and also as to the strength of the solution from which may be expected the most satisfactory results; principally, I think, because cocaine and cocaine chloride have been referred to indiscriminately. The former is a comparatively insoluble alkaloid (soluble in 720 parts of water, and more soluble in alcohol and ether), the latter being a soluble chloride, easily dissolved in water. Cocaine is the alkaloidal principle of the

erythroxylon coca, a small shrub indigenous to the mountains of Bolivia and Peru, and when obtained in a pure state is in colourless prisms, and of a strongly alkaline reaction. It is derived from an infusion of the leaves of the plant, this solution being rendered alkaline, and then evaporated with ether. The preparation used in surgery, and the one attracting so much attention at present, is the chloride of cocaine (as before intimated commonly called cocaine), a grayish-white powder, and, like most chlorides, readily soluble in water, to which may be added a few drops of alcohol to preserve the solution when it is to be kept constantly on hand. When used in pure alcohol, and applied to the mucous membrane, the solution causes irritation and sloughing. The best effect to be obtained by the use of this drug in the mouth is from a two to four per cent. solution, and it should be applied to the parts to be operated upon with a small camel's hair brush, or a pledget of cotton, wiping the parts as dry as possible before applying the solution, and keeping the mouth open, thus preventing the washing away or dilution of the drug by the fluids of the mouth.

Its anæsthetic effect in the extracting of teeth is regarded by many as impossible or at least so insufficient as to be of but little practical benefit; but I can say that I have used it with results exceeding my most sanguine expectations, being able to extract diseased and sloughy roots without perceptible pain, and having extracted a number of teeth firm in the jaw for different individuals who have declared that they suffered no pain whatever. There have been a few cases which, by reason of the poor quality of the drug, or the idiosyncrasies of the patient, have not been attended with such good results, the patients stating that they felt some pain, but that they would be satisfied if they never suffered worse in operations of the kind. One patient, who had been badly salivated, did not seem to experience any effect from its application upon the gum, but when applied to the tongue the peculiar sensation of numbness was apparent.

One of my most interesting cases was the treatment of an alveolar abscess, resulting from a diseased lateral incisor, for a highly sensitive and nervous lady. After cleansing the

root, one of Morey's drills of medium size was passed entirely through the apex. It being necessary to remove the necrosed bone, an application of cocaine was made to the gum, and after a few moments I passed the point of a hypodermic syringe through the partly united fistulous opening, and injected a few drops of the cocaine. At the expiration of five minutes I proceeded with the engine burr to drill out the bone, which was accomplished without the usual protestations and shrinking from pain, the patient remarking that she felt no pain at all. A similar injection of Listerine was made through the root, it passing readily out through the opening in the gum. The anæsthesia lasted twenty minutes, and had a radius of half an inch from the point of injection. To test its effect, I passed a bistoury through the gum, and as far into the bone as possible, in several places; and the patient, being told to cleanse the mouth, asked where the blood came from, thus proving the anæsthesia to be complete. On the return of the patient, two days afterwards, the parts were in a perfectly healthy condition, the abscess having healed. I then filled the tooth without further treatment. This case occurred early in November, and I have seen the lady a number of times since, and found the tooth to be perfectly healthy.

I have since had two cases of a similar nature, both being attended with the same happy results.

The removal of a fractured portion of the alveolus, caused by the extraction of a lower right third molar, for an elderly lady, brought to my office by a neighbouring physician, was effected very successfully. The tooth having been removed some eight days previously, and the parts being much swollen and very painful, an application of a four per cent. solution was made to the gum, and about four minims were dropped into the alveolus. Within ten minutes the bone was removed it being about one-third of an inch in width, and one-half an inch long. The operation was attended with no pain, and with but very little hemorrhage.

Another great advantage to be derived from the use of this drug is in fitting of gold bands upon the roots or necks of teeth, preparatory to substituting artificial crowns and

bridge-work, where it becomes necessary to place the band well under the gum. This can be accomplished in cases of the most delicate persons, with no attendant pain, by an occasional application of the cocaine.

Although not as yet fully understood as regards its applicability to dental surgery, the brief past of cocaine bespeaks its universal adoption in the future; and its introduction marks an epoch in the history of dentistry, and a step forward in the triumphant progress of science and scientific research the importance of which can hardly be overestimated. Notwithstanding its advent is met with frowns of disapproval by the conservative element of the profession, and by those who have not the inclination to exert themselves to the extent of making a thorough investigation into its merits, it promises to override all opposition, and by intrinsic worth to win for itself a permanent place in the operating room of every enterprising and successful dentist.—*Dental Cosmos*.

HEMORRHAGE, HEMORRHAGIC DIATHESIS, HÆMOSTATICS.

DISCUSSED BY THE ST. LOUIS MEDICAL SOCIETY.

DR. LOVE.—A case of considerable interest to me during last week was a case of hemorrhage in a child about twelve years old. It had been playing with one of its toys, with which it had wounded the gum, and the first notice of it by the parents was when blood was coming from the mouth. On investigation, his mother found a small scratch or puncture in the upper alveolar process in the gum on the left side. In consequence of the fact that the child had had a similar experience some months before, that had been very dangerous, the mother was considerably disturbed. They applied alum and a number of other astringents to the part, with a view of producing a hemostatic effect, without success. When I saw the child, it had been bleeding several hours. The blood flowed very freely from the opening, which was confined to one wound, possibly large enough to admit the small end of the small probe that we usually have in our pocket cases. Upon inquiry, I found that it was almost a similar

wound to that produced by some plaything a few months before, that had resulted so seriously. The child bled for several days, until really it was in a critical condition. A number of irritating applications had been applied, and a considerable amount of nerve action set up; finally they applied the red-hot iron. In consequence of my previous happy experience with chromic acid in two similar cases of bleeding, both being from the gum, and both being, as this case was, in children of the hemorrhagic diathesis, I attempted to use chromic acid as an astringent; it is necessary to use it in as nearly a solid state as we can get it, which is just barely deliquescent. It is a very difficult cautery to control; it runs very readily, taking up the moisture of the surrounding parts very rapidly. In the gums it is a very difficult place to apply it, because there is so much saliva, and the chromic acid runs and diffuses itself generally and very markedly. I appreciated the difficulty of application, particularly as this child was very fretful, and in an irritable state dependent upon the accident, and also somewhat upon the condition it was in, not having fully recovered from its previous experience. After attempting by myself, with the aid of the members of the family at holding the child, etc., I found it would not be safe to apply the chromic acid, and suggested consultation, and Dr. Mudd was called in. I held the child, and he attempted to apply chromic acid; he also was favourably impressed with chromic acid as an escharotic for such purpose. But after a fair trial and no success, we resolved upon the use of the hot-iron. The thermo-cautery was applied, resulting very nicely in producing a sufficient eschar to completely close up the bleeding vessels. In the use of the heated instrument, I observe, that it is not best to have the white heat, not to even have the red heat, but simply the dark heat: and not too hot, or it will burn too much; a mild degree of heat is preferable, and it accomplishes the purpose very nicely. The case impressed my mind to a considerable degree, and it interested me a great deal. The child was really in a critical condition; its digestion and its assimilative powers had been very materially impaired by the previous experience some six months before. The hemorrhage which

occurred at this time I thought might be partially due to the anemic condition of the child. It lacked that tone of capillaries which should be present, and suggested the question of the so-called hemorrhage diathesis. It is a question whether there is such a diathesis. I believe that a writer in the *Encyclopedia of Surgery* (Ashhurst's) speaks of it, and gives as his opinion, that it is doubtful if in these bleeders, so-called, the bleeding is not due to some special condition of the blood, or capillaries themselves, depending possibly on a scorbutic condition, or a thinning of the blood, or lack of tone generally, sometimes by malarial poisoning. Some years ago I reported the case of a man, aged about forty years, a very intelligent man, who had once or twice in his life suffered hemorrhage when teeth were drawn, and on one occasion he came very near dying. One of the largest molars had been pulled, having a very large surface bleeding, and various means had been used to check the hemorrhage, all of which succeeded for a time only. Of course the part was irritated to a very considerable degree, and this rather aggravated the hemorrhage. Pressure was applied for a long time. The gentleman who drew the tooth devised a mechanical appliance. He made a compress; it was perpendicular, and attached to the tooth with a horizontal portion extending out over the bleeding surface. The perpendicular portion was firmly attached to the tooth. Underneath the horizontal plate was put in punk, a styptic used by dentists, and very considerable pressure was secured in that way, and the hemorrhage was controlled for hours. Then when the compress was loosened up, although the hemorrhage had been controlled for six or eight hours, in several instances, it would recur again as fast as ever. This gentleman temporized a long time, when finally the chromic acid was used, and succeeded admirably in producing an eschar which clung to the surface tenaciously. In fact, it has been my observation that an eschar produced by chromic acid will cling more tenaciously to the part than that produced by any other means, and I think it gives less pain and less discomfort generally; the parts heal beneath completely before the eschar separates. This was the case with this gentleman;

the eschar remained as a plug closing the capillaries, and when finally it did separate, after two or three weeks, the parts were all healed up. This gentleman had several experiences during his life of a similar character leading me to believe he was of the hemorrhagic diathesis, inducing me to advise him never to have his teeth pulled, to let them drop out, in order to avoid such a dangerous occurrence. I have observed him closely for several years that have elapsed since, and I am inclined to think that there was a constitutional condition present at that time, of a scorbutic character, probably, which possibly caused the hemorrhage. And that together with my reading and the case I have just recorded leads me to doubt whether there are really people possessed of a constitutional predisposition to bleed ; whether it is not dependent upon conditions that are present at the time, which may be removed by remedies or cured by treatment. In this connection, I think I have seen it stated in the press that the late Duke of Albany, son of Queen Victoria, was a bleeder. My conclusion is, that the existence of a hemorrhagic diathesis permanently is questionable.

(To be continued).

DENTAL JURISPRUDENCE.*

By DR. J. ALLEN OSMUN, New Jersey.

MR. PRESIDENT AND GENTLEMEN,—In inviting your attention to this subject I presume that it is one in which you feel a passing interest, although, in the busy days in which you are the chief actors, it may not have enlisted that amount of attention and thought to which the matter is entitled. In fact, I may embrace this occasion to remark that it is a matter of some surprise that it has received so little attention at the hands of our profession. I therefore beg your indulgence while I hastily sketch in rough outlines some of the more prominent reasons why the dental fraternity should have their attention directed thereto. The old Scotch gardener remarked, when asked why he was so particular in protecting his plants when the chances of frost were so light, that he would “rather be sure than sorry.”

* Read before the Second District Dental Society of the State of New York.

We must start from the premises, that legal or forensic medicine is the science that teaches the application of medicine to the purposes of law. The grand object of law is the establishment of truth, and for this purpose it levies a tax upon all sources, dental among the rest; and may I be pardoned if I suggest that there are many cases where it draws largely from this source, some of which I may refer to later.

There is, seemingly, a growing spirit of liberalism pervading medical circles, and the lines are converging, which I trust at no far future day will meet, by medical and dental colleges uniting on one common platform, in all that can elevate the one or broaden the other; that it will not be long when we can say, as Madam de Stael said to Napoleon; "Sire, genius knows no sex." So may we affirm that the science of healing knows no "sects."

You are aware, I presume, what progress is being made in this direction by the Medico Legal Society of New York. They are investigating all manner of questions and diseases that pertain to this subject of Medical Jurisprudence, but I have failed to see in any of their published reports any reference to the dental profession, or to questions that affect us in any degree. As their bye-laws prohibit any but physicians, lawyers, and chemists from membership, this may in part explain the omission.

This society of which I speak, comprises some of the brightest intellects of each of the three professions named, and if they find this field so full of good things, I take it we too can find a few diamonds of knowledge, if we will but search for them.

We must recognise the fact that as professional men, dealing with diseased tissues, we are liable at any time to be put on the defensive from charges of mal-treatment; or that we may be called upon, in the capacity of expert witnesses, to give our professional opinion in courts of law; and as we well know, there is no other way of excluding the testimony of ignorant pretenders or empirics upon professional subjects, or eliciting the truth, except the test of cross-examination, and to be effectual for that purpose it must be allowed to become very searching; and I am convinced that, while it is

not always done justly or fairly, it is the only mode of bringing out the facts before the intelligent jury; we do not realise how much need we have for accurate diagnoses, prognoses, and deductions of critical attention to our opinions, until we have them weighed and dissected by counsel before a jury.

There have been times without number when dentists have been in court, either as plaintiff or defendant, in suits of all descriptions. In fact, a superficial observer would be surprised to discover the close relationship existing between the two sciences of law and medicine. Let me recall a few cases where this is true; where life has been lost under the influence of anæsthesia; where injuries have been inflicted from unskilled operations; where diseases of the oral cavity have been improperly handled; where testimony has been needed to identify remains from accident or suicide; where serious charges of attempted assaults of a sexual character while under anæsthesia have been made; of the question and legality of fees and payment thereof. It were easy to multiply cases in illustration of this nature, but the foregoing will suffice to show something of the importance of this subject.

I am led to suggest that the very first case that a young practitioner could have might involve these very principles, and it, of course, is liable to come to any of us, at any moment.

When called into court as a witness, you will often find that your testimony will be opposed by others engaged by the other party to the suit. Then it will be of great importance to your side if your evidence can be substantiated by indisputable proofs, drawn from sources that admit of no question.

One of the greatest—shall I say the greatest?—attainments of any professional man, is the cultivation of the faculty of close, minute observation; to be accurate in observation, to be critical in your deductions, is of paramount importance. Nor should it be supposed for a minute that this cultivation of the habit of minute observation will be incompatible with the other duties pertaining to our daily toil; it will, on the other hand, greatly enhance our usefulness.

(To be concluded.)

Abstracts of British & Foreign Journals.

SOUTHERN DENTAL JOURNAL.

FILLING PERMANENT TEETH OF CHILDREN.

By Dr. C. M. MARSHALL.

Dr. Marshall considers filling the teeth of children with cohesive gold to be pernicious.

1st Because it is not the best material for filling.

2nd Because a filling that will not save a tooth, serves usually to mask the real condition until pulp irritation, and frequently inflammation ensue.

3rd Because we have filling materials that will arrest decay in these teeth, and preserve them until maturity, when they will be sufficiently hardened to receive gold as permanent work.

Before maturity, many teeth are so soft that the pressure necessary to impact cohesive gold solidly in apposition to the walls of a cavity will cause fractures of the edges of the cavity. Though slight, they would yield to the action of the fluids of the mouth.

The filling with cohesive gold taxes severely, and Dr. Marshall thinks beyond endurance the fortitude of children.

Many may be saved, but with proper hygienic laws none should be lost. Why, he asks, should one of four incisors, with caries of similar extent, be lost, after an equal amount of care has been bestowed upon filling each?

The writer claims that children's permanent teeth, though sometimes deficient in lime salts, can be preserved if properly treated. He advises that the teeth be filled which are exceedingly deficient in structural constituents with either oxy-phosphates or oxy-chlorides. These fillings to serve a period of six months or two years. When the filling is dissolved it may be re-made. When the teeth are fairly supplied with lime salts, a high standard of amalgam may be used, especially for bicuspid and molars. By this means we can bridge over the most dangerous period of carious permanent teeth, and finally fill them with cohesive gold.

THE INDEPENDENT PRACTITIONER.

TREATMENT OF DEFECTIVE TEETH DURING PREGNANCY.*

By C. A. MARVIN, D.D.S., Brooklyn, N.Y.

The answer not infrequently given to the question embodied in the title of this paper is: "Treat them, as at any other time, with care and thoroughness." The writer dissents to part of this answer.

During pregnancy a woman's mind is probably entirely free from whims; there is a resolution to endure, but the tax and drain upon her nervous force were beyond all former measure; the suffering she evinced was real and very acute, and only tolerable through sheer strength of will. Her nervous system formerly in repose is now agitated, taxing herself to the utmost. The effort is almost or wholly beyond her lessened nervous energy to bear. After such effort she is much collapsed. The writer emphasises the great importance of gentleness and forbearance on the part of the dentist. He will do his work better and his patient will endure it better.

What causes this hypersensitive condition of the teeth, and the nerve prostration? Pregnancy in general is a state of peculiar experiences and phenomenal manifestations.

The dependence of the foetal structures upon the maternal reserve stores is then pointed out, and the tax this imposes upon her constitution. Besides the draft upon the physical energies, there is another as constant and even more taxing, viz., the drain upon the nervous energy.

Now, take the case we are considering, of the pregnant woman. During pregnancy there is considerable of a disturbance in a very delicate portion of the body. And there is good reason for such disturbance. Not only is the whole mechanical nature of the body altered by the presence of the foetus, but it is alleged the woman's dread of possible injury to her unborn infant tends to increase the strain on her nervous system.

A woman in pregnancy should be guarded carefully from disturbing occurrences or disturbing thoughts. Worry

* Read before the Central Dental Association of Northern New Jersey.

should be kept from her, as her own excited imagination will conjure up enough ills. He advises if there are cavities in such a mouth, which the dentist could fill permanently and without much pain, the dentist must be guided in his treatment by his patient's temperament. A phlegmatic individual might undergo the necessary manipulations and escape all harm.

The offspring may not seem to have been injuriously affected. It is well formed, hardy, and perfect.

Unless some extraordinary reason exists for performing at once the dental operations required by such a patient, the writer advises to do only temporary work. He adds, cavities sufficiently prepared to receive and retain protecting gutta-percha fillings; gentle manipulation of the mouth through the whole sitting; avoidance of such methods, materials, appliances as seriously irritate the nervous system; a pleasant and hopeful view of the case; an encouraging word as to the condition of the teeth, their safety for months to come, their reduced sensitiveness when ready for permanent fillings—all these details enter into the proper treatment of patient and teeth at such a period.

Unwise operations during pregnancy may cause premature birth, or a weak, unbalanced, blighted child, peevish, morbidly timid, dyspeptic in earliest infancy. Delay until the gestation is over cannot safely be allowed. There is lowering of tone and increased sensibility in the dental tissue. If the teeth are neglected, they may be lost or seriously damaged by the delay. Ordinary irritants fail to affect healthy teeth, the teeth of pregnant women feel such acutely. Temporary filling will keep the tooth going until the pregnancy is passed, and no undue shock will have been imposed on the patient's nervous system. The tooth is saved, and can be permanently filled at a future time.

If such a patient has teeth with exposed pulps, or with dead and putrefying pulps, or has an alveolar abscess. In such cases all palliative measures should be employed before resort be had to operation, but if these fail, delay should not be allowed, and any necessary operation must be undertaken.

Dental News.

THE ODONTO-CHIRURGICAL SOCIETY.

The Anniversary Dinner of the Licentiates in Dental Surgery and members of the Odonto-Chirurgical Society was held on Friday evening, 13th March, in the Balmoral Hotel, Princes Street, Edinburgh. Mr. Robert Reid, L.D.S., Eng., occupied the chair, and Mr. Rees Price, L.D.S. Eng., officiated as croupier. Among those present were Dr. John Smith, President of the Royal College of Surgeons of Edinburgh, Dr. D. R. Haldane, Dr. Littlejohn, Dr. David Wilson, and besides the local members—Dr. Williamson (Aberdeen), Mr. John A. Biggs (Glasgow), Messrs. W. Campbell and J. Fisher (Dundee), Mr. Norman MacQueen (Hamilton), Mr. Stirling (Ayr), &c.

The usual patriotic toasts having been given by the Chairman, Dr. Williamson, in proposing the toast of the "Dental Diploma," said he thought it was getting rather ancient in character, as it was now seven years since its possession was made essential for any one entering the profession, and about a quarter of a century since it came into existence; and in fact he understood that their annual meeting on the 13th of March was a sort of birthday celebration of the institution of the diploma by the English College of Surgeons.

It has been contended by some, with theoretical truth, that Dental surgery, being but a speciality of general surgery, should only be practised by those who had obtained the surgical degree. Suppose, then, one has obtained that degree, he is practically unqualified to practise dentistry, while one who has passed the dental curriculum would be quite as prepared for his special work as the newly-fledged medical graduate is to enter on the duties of a general practitioner. The dental qualification was, therefore, the primary degree to be obtained, and if time and opportunity permitted, the ordinary surgical or the higher fellowship might with advantage be added, as it gave the possessor a higher professional standing, and was the evidence of a wider

range of general medical culture on the part of the holder. But however valuable the education of the head might be, that of the hands, to a certain extent at least, was almost more important, and should form the very commencement of dental education, and be continued throughout the curriculum. This manual training would probably be developed more and more by the practical tendencies of modern teaching.

Dr. Littlejohn said, that as one of the guests, he took it as a great compliment to be called upon to propose the important toast of "The Odonto-Chirurgical and sister Societies." He was sure no Society had vindicated its position and its right to be well toasted more than this Society, because it was a most flourishing Society, and it had fulfilled its chief condition of existence—the advancement of the best scientific interests of the profession. He could not think of the Odonto-Chirurgical Society without remembering one who would have been present with them—Mr. Hepburn—if he had not been laid aside by illness. He coupled the toast with the name of their new President, Mr. Bowman Macleod. He could not imagine a Society better suited with a President than on the present occasion. Mr. Macleod was the very embodiment of energy. He knew how to work not only his way in the world, but also to guide young bodies such as the Dental school on their onward course. He augured for the society during the current year a large measure of success.

Mr. Macleod said that it was always a pleasure to perform a duty, if the performance of that duty brought with it unalloyed pleasure. Such was the case in this instance, as the duty of replying to the toast of the Odonto-Chirurgical and sister Societies had been imposed upon him by his election that day to the most honourable position of President of the Odonto-Chirurgical Society—an honour which he felt to be much beyond his deserts. What, however, rendered the pleasure unalloyed was that in reply he had to speak not only for their own Society, but for those other Societies throughout the kingdom which, like their own, had for their object the advancement of the profession in science and ethics. Dr. Littlejohn had humorously alluded to the dinner as a great feature in such Societies. He, however, hoped

that nobody would run away with the idea that they considered the dinner as of the first importance; they only viewed it in the light of its enabling them the better to give good and substantial service to the public, as it was admitted on every hand that without good meat you could not give good work. In the names of all the Societies—from the Odontological of Great Britain, which was the oldest, to the Odontological of Birmingham, which was the youngest—he thanked them for their cordial good wishes.

The Croupier (Mr. Rees Price) said it required few words to commend to them the toast of "The Licensing Bodies." Those corporations were of remote antiquity; they were indissolubly bound up in the past progress of medicine and in the education of its professors; and, above all, to the surgical corporations the dental profession owed largely its present position.

We fitly commemorated to-day the establishment, some twenty-five years ago, of the Dental Licence by the College of Surgeons of England. This was a most important stone—the foundation stone—of the dental edifice, of which the foundations were the establishment of the Odontological Society in 1856, and of the Dental Hospital of London in 1858. The building of the profession gradually proceeded, till in 1878, by the passing of the Dentists' Act, the whole profession was placed upon that footing which many of its individual members had obtained by means of the English licence.

The crowning of this edifice was, without doubt, the act—at once graceful and courteous—of the College of Surgeons of Edinburgh, in placing at the disposal of the representative body of the dental profession its magnificent suite of rooms. It seemed to him a fit consecration of the efforts of those who had worked so earnestly and laboriously in the interests of the dental profession, and in the founding of the British Dental Association, that the deliberations of the latter body should take place in a building so rich in historical associations and so pregnant with memories of the past. But though the dental edifice was completed externally, it was far from finished, and with the licensing bodies the future

to a great extent rested. It must be a satisfaction to all to see the position which the College of Surgeons of Ireland took up last autumn in revising its curriculum. Though all would not agree with the College in substituting attendance at a public dental laboratory for two years in place of three years' pupilage with a qualified dental surgeon, yet it could not but be admitted that a distinct step forward had been made, in so far as the curriculum provided that there were three professional examinations through which the student must pass at different periods of his study.

In Scotland, at present, the candidate had the option of passing the two required examinations at the one time; but he hoped the day was not far distant when that option would be taken away, and that it would be compulsory upon the candidate to pass the examinations separately. Not only this, but that the first professional examination for the dental licence—the examination in anatomy, physiology, and chemistry—would be equal in every respect to that required from the student for the general licence. He coupled the toast with the name of Dr. Smith, who was well known, not only to dental surgeons, but as President of the Royal College of Surgeons of Edinburgh, and as President of the British Dental Association. From his work on behalf of the dental profession, he felt fully assured that the interests of the licensing bodies were in safe hands, well able to help them in what might be termed a struggle for existence with an Act of Parliament.

Dr. John Smith regretted the absence of Dr. Patrick Heron Watson, who was to have answered to this toast, but he fully appreciated the compliment and the kindly feeling which had been expressed towards the licensing boards by the body which was associated to them now by means of the dental diploma. He referred to the important changes which had occurred during the year in the working of the licensing bodies, and said he believed all these changes had been for the better. He was sure they would agree with him in feeling a satisfaction that these bodies had been placed in a position much better than they ever enjoyed before. Changes were necessary in any of the progressive sciences, and

changes in the examining and teaching bodies connected with these sciences were equally necessary; but the consideration of these required a great deal of prudence and time before they were accepted as wise changes, and changes which would be for the benefit of the licensing bodies. He would only further say that in the probable event of still further legislative changes being effected—of more parliamentary interference, which was very likely to occur—instead of what happened last year and the year before, it would be well and more seemly if Scotland, seeing the wider experience she had in educational matters generally, were consulted to a greater extent than she had been on the question of medical reform.

Dr. D. R. Haldane proposed "The Edinburgh Dental Hospital and School." He contrasted the facilities given now for practical instruction in medicine as compared with what they were when he commenced to study. At that time, he said, practical instruction was a thing unknown. Nowadays courses of lectures, instead of being the principal mode of teaching, were looked upon as comparatively unimportant. Real knowledge in medical subjects was obtained at practical classes.

Having referred to the Dentists' Act, he said that it was almost a necessary consequence that a dental school should be established, and nowhere was a dental school more necessary and more likely to prosper than in Edinburgh. Such a consummation had taken place. The Dental Hospital and School had been established, and was progressing in a most satisfactory manner. The scheme on which it was founded was certain to progress, and as Edinburgh had been so distinguished for its medical school in other respects, he had no doubt in the course of a few years the dental school of Edinburgh would be equally distinguished.

Mr. Mackersy, the Hon. Sec. in the course of his reply, spoke of the necessity of enlarging their present accommodation at the hospital. The committee had considered the question of procuring a site and building a new hospital. He urged on them the propriety of helping them in this scheme, and said if it was carried out it would be an orna-

ment to the city and of immense importance to the profession, because it would be sufficient for the wants of Scotland.

Mr. John A. Biggs gave the toast of "The British Dental Association." He said the Association was beginning to assert itself in a very particular and efficient manner for the protection of the interests of the profession, and he failed to see how any registered dentist could afford to remain unconnected with it. He hoped the day was not far distant when one and all would band themselves together under its auspices for their mutual protection.

Dr. Smith, in replying, said he thought some alteration in the rules of the Association might advantageously be introduced, whereby no private individual—no dentist, should be called upon to perform so invidious a duty as to prosecute an irregular practitioner, because that action might be imputed to motives of professional jealousy. They knew how much Mr. Macleod had suffered in that respect; but he thought their Association should have a legal official for such a duty if it could not be performed by the Public Prosecutor.

Mr. Amoores then gave "The Chairman," a toast very warmly responded to, and Mr. E. A. Cormack, "The Croupier," which brought to a close a most pleasant and successful evening.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

ORDINARY MONTHLY MEETING, Monday, March 2nd, 1885.

C. Spence Bate, F.R.S., President, in the chair.

The Minutes of the previous meeting having been read and confirmed,

The President announced that Mr. Edward Latchmore, L.D.S., Eng., of 31, Upper Baker Street, Regent's Park, had been duly nominated, and would be balloted for at a subsequent meeting.

Mr. Weiss (Librarian) said he had to acknowledge the receipt of a large collection of dental periodicals from Mr S. L. Finzi; some of these were early numbers, and therefore valuable.

He had also received the following ;—"Dental Surgery for

General Practitioners," by Ashley W. Barrett; *Quarterly Journal of Microscopical Science*, January, 1885; *Journal of Anatomy and Physiology*, January, 1885; "Calendar of the Pharmaceutical Society, 1885; and the "Transactions of the International Medical Congress of 1881." For the last he was indebted to Mr. Jas. Parkinson.

Mr. Oakley Coles showed a pair of excising forceps for upper back teeth. They were so curved as to enable the operator to get at the back of the second molar and cut down a wisdom tooth stump to the level of the gum. Mr. Coles added that though these forceps had been made expressly for him, according to his own pattern, he should not be surprised to hear, as was so often the case under such circumstances, that some one else had been using a precisely similar instrument for years past.

Mr. Hutchinson announced that Mr. Charters White had presented to the Museum copies of the beautiful photographs of the salivary glands of insects which he had exhibited last year in illustration of his paper.

He had also received from Mr. White, of Norwich, the skull of a shark, caught near Felixtowe; the skull of a ray; and a cat's skull showing a fracture of the lower jaw, which had united with very slight deformity,—a good example of what nature could do without the aid of splints.

Mr. White said he had brought two other specimens which he proposed to offer to the Museum. One was a model of the upper jaw of a young man, aged eighteen, showing two permanent laterals placed directly one behind the other. The pressure of the antagonising tooth had caused absorption of the posterior of these teeth to such an extent as to lay open the pulp cavity. Mr. White extracted it, and showed it with the model.

He also exhibited models of the mouth of a young lady, now aged nineteen, whose case he had brought before the Society in December, 1883. She had then six permanent molars in the lower jaw, and the wisdom teeth were just coming through. They were now fully erupted. Mr. White had been obliged to extract the stump of the right six-year-old molar about fifteen months ago, the crown having been

destroyed by caries ; but there were still seven permanent molars in the lower jaw, and there had been eight erupted. There were, however, only two lower bicuspid ; the place of the second bicuspid on each side being occupied by a large molar. The teeth in the upper jaw were normal. The patient's parents and brothers and sisters presented nothing unusual as regards dentition.

Mr. Hern showed a vulcanite plate which had been made by Mr. Ernst Sjöberg, a student of the Dental Hospital of London, for a patient whose right superior maxilla had been removed at King's College Hospital, on account of a malignant growth, and read notes of the case.

The operation was performed on July 18th, last by Sir Joseph Lister, the whole of the right upper maxilla, together with part of the cheek and nose being removed. Early in October the patient was sent to the Dental Hospital of London with a request that he might be provided with a vulcanite piece to fill up the palate, after which, he was told, "he would only require a piece of sticking plaster to cover the wound."

When the patient presented himself at the hospital he was in a most pitiable condition. He was unable to articulate on account of the loss of air through the opening in the cheek ; he was unable to masticate properly on account of the absence of the teeth and alveolar process on the right side of the mouth ; and further, owing to the removal of the floor of the orbit, the eye had sunk, thus throwing the axes of vision of the two eyes out of harmony, and giving the patient the additional inconvenience of diplopia. Mr. Sjöberg undertook the case, and set himself to remedy these defects. Models of the mouth were taken in Stent's composition and plaster casts obtained. There was some difficulty experienced in taking the models and getting the articulation, owing to the loss of the right maxilla, the tenderness of the gradulations, the great flaccidity of the right upper lip, and the low state of the alveolar process, the patient, who was sixty-eight years of age, having been edentulous for fifteen years. In fitting provisional plates an appendix of wax was made to project into the nasal cavity, which gave greater steadiness ; this was cut away before vulcanising.

A complete set of teeth was made and retained by springs. On the upper plate an appendix of hard gutta-percha was built, similar to that for the wax trial plates ; this was slightly altered daily, until a good fit was obtained. After a month's use it was replaced with hard rubber.

An attempt to model the external opening was next made, the lips and soft parts being now kept in position by the plates and teeth. The opening in the cheek was modelled with plaster, and whilst this remained *in situ* its surface was oiled and a plaster model of the face was taken. These together provided a correct model of the parts to be covered. To this cast a wax core was modelled restoring the original contour of the face and nose. This was thin except where it served as a floor to the orbit, in which position an appendix was built to support the eye, and it was hoped subsequently to correct its position. The wax core was tried on the patient and carefully fitted ; it was then reproduced in vulcanite. A spectacle frame was made to suit the patient, having soldered to the inner part of the right eye-piece a metal tongue, which was attached to the vulcanite apparatus by two small screws. A moustache was also fitted to hide the scar and rather contracted appearance of the right side of the mouth. Finally the vulcanite apparatus was painted over with oil colour to match the patient's complexion as nearly as possible. He wore the apparatus for about three months, and with it he could not only speak clearly and masticate well, but was also greatly improved in appearance. It was, however, found impossible to restore the eye to its proper position, so as to get rid of the double vision. Unfortunately a recurrence of the disease began to show itself in January ; a second operation had since been performed at St. Bartholomew's Hospital, and the use of the apparatus had therefore been discontinued for the present.

Mr. Oakley Coles said he had found it almost a hopeless task to attempt to raise the eyeball so as to restore the proper axis of vision when, as in Mr. Hern's case, dropping of the eyeball had occurred owing to the removal of the floor of the orbit. Having had a good deal of experience in the treatment of these cases it might be worth while to state some of the

views at which he had arrived. He found paraffin wax the best material to take the final impressions with, and he found celluloid a better material than vulcanised rubber for the piece itself. At one time he used rubber, putting, if the plate was large, a piece of pumice, cut to shape, in the centre to lighten it ; but he now preferred celluloid. The surfaces, and especially the edges, should be very carefully trimmed.

To be continued.

MONTHLY REPORT OF CASES TREATED AT THE DENTAL HOSPITAL OF LONDON.

DURING THE MONTH OF MARCH, 1885.

Extractions	{ Children under 14	451
" "	{ Adults	986
" "	{ Under Nitrous Oxide	550
Gold Fillings	. . . . .	291
White Foil ditto	. . . . .	10
Plastic ditto	. . . . .	887
Irregularities of the Teeeh	. . . . .	185
Miscellaneous Cases	. . . . .	440
Advice . . . . .	. . . . .	127
		<hr/> 3927

ARTHUR KING, House Surgeon.

DENTAL HOSPITAL REPORTS. NATIONAL DENTAL HOSPITAL.

MONTHLY STATEMENT OF OPERATIONS FROM MAR. 1st. TO MAR. 28th.

Number of patients attended	1622
Extractions { Children under 14	365
" { Adults	505
" { Under Nitrous Oxide	552
Gold stoppings	80
Sheets of Gold used independent of Pellets	
Other Stoppings	621
Advice and Scaling	214
Irregularities of the Teeth	188
Miscellaneous	116
TOTAL	2641

ISIDORE FREDERICK PRAGER, House Surgeon.

DENTAL HOSPITAL OF EXETER. BEDFORD CIRCUS.

QUARTERLY REPORT OF CASES, JANUARY 1st, TO MARCH 31st, 1885.

Extractions	{ Children under 14	260
" "	{ Adults	600
" "	{ Under Nitrous Oxide	54
Stoppings	{ With Gold	8
" "	{ " White Foil	15
" "	{ " Plastic Material	172
Miscellaneous	{ Irregularities of the Teeth,	134
		<hr/> 1243.
TOTAL		

HENRY B. MASON, Hon. Sec.

British Journal of Dental Science.

No. 416.

LONDON, MAY 1, 1885. VOL. XXIX.

THE MISSING INCISORS IN MAN, WHAT ARE THEY? *

By ANDREW WILSON, Esq., L.D.S., Ed.

The number of incisor teeth in what is called the typical dentition in placental mammalia being in each jaw, six or three pairs (one central and two lateral), while that in man is normally two pairs (one central and one lateral), the question I propose raising is, which of the lateral pairs has been suppressed? The answer given by the authorities on Dental Anatomy is, the outermost, *i.e.*, the third on each side. Mr. C. S. Tomes, in his manual, 2nd edition, page 9, says;—"The human subject does not possess the third incisor. . . so that a somewhat abrupt change of form in passing from the incisors to the canines. . . is no more than might be anticipated," and at page 286, he gives as a general rule "It is usually said that when incisors are missing from the full typical number, they are lost from the outer end of the series; that is to say, if there is but one incisor, it is 1¹; if two 1¹ and 1². There are many exceptions to this, *e.g.*, the first incisor is the first to disappear in the otter (?) walrus, and some others."

The first named is evidently a misprint for the Oariæt (eared seals) the number of incisors present being very varied in the different genera among the Phocidæ.

As in the superior maxilla, we have the advantage of the incisor teeth being restricted to a well defined portion, the intermaxillary, originally a distinct bone, I will, in what follows, speak of the upper incisors only.

Cases in which we find the full typical number of incisors present and of normal form in man, are seemingly very rare, but cases in which, while only the normal number was

* A Paper read before the Odonto Chirurgical Society of Scotland.

present on one side, there were three on the other, are much more frequent.

These extra teeth usually follow the lateral type, but we have a model in the Museum of our Society of one following the central type.

Of the first class, I have only met with two (exclusive of one* in the temporary dentition) as against seven of the second class, and as in these (with two doubtful exceptions) the lateral second from the canine seemed to me the interlaced one, I have been in the habit of teaching that I considered the suppressed incisor in man to be the second, not the third, the authority of the manual notwithstanding.

This view is very materially strengthened if we include, as incisors, those abnormally formed teeth, which so frequently show themselves in the intermaxillary portion of maxillary bones.

These almost invariably take up a position either between the normal lateral and the central incisor, or the mesial line, most frequently within the dental arch.

Looking to the forms of these teeth, we may arrange them in two groups, the first, by far the more common, are pointed conical teeth (the typical supernumerary tooth), the second are usually much larger, with very irregularly formed cutting edges, frequently broad and multi-tuberculated.

The first group I hold to be lateral incisors taking on the rudimentary form, which we find, as a rule, to precede suppression and which we now find not unfrequently in undoubted lateral incisors. I may remark in passing that it is from the more frequent appearance of this form in the normal lateral, coupled with the seemingly now more frequent suppression of this tooth, that we conclude that in man there will in course of time be only the central incisors left.

* In this the teeth formed a perfect arch, and the central and second incisors were geminated, each having its own pulp cavity.

The after history of this case would have been of considerable value, but the accidental death of the boy made it only partial. A second model shows that the second incisor on the right side was succeeded by a permanent one, which erupted *outside* the arch. His father (a medical lecturer) reported that a lateral had appeared on the other side in succession to the *third* temporary incisor, and that there was no appearance of a second. Still, sufficient time had not elapsed to try it might not have come; at the same time, if it had done so, it would have been out of the arch.

Those of the second group I regard as, when large, malformed incisors of the central type, and when smaller, of the lateral; and I think a close inspection of these forms will bear me out.

Holding these opinions, I was much pleased to learn, through a paper by Professor Turner on "The relation of the alveolar form of cleft palate to the incisor teeth, and the intermaxillary bones," read before the Royal Society here in December last, that Dr. Paul Albrecht had, while investigating the anatomy of cleft palate, been led to the same decision regarding the suppressed incisors in man.

For the benefit of those members who may not have an opportunity of seeing that paper, which strongly supports Dr. Albrecht's views, I will, in conclusion, very briefly give the chief points which led Dr. Albrecht and Professor Turner to that decision.

In very much the larger number of cleft palate cases examined by them, they found that the alveolar fissure, in place of being in the line of the maxillo-intermaxillary suture, that is, between the outer incisor and the canine, was to the *mesial* side of the outer incisor and so in the body of the intermaxillary bone, the maxillo-intermaxillary suture co-existing with it. Minute examinations of a large series of superior maxilla led to the detection of traces more or less decided of the "intra-incisive" suture (in the plane of which the cleft usually occurs) and to the conclusion that originally the intermaxillary portion consisted of two bones on each side, the mesial one of which, in man, carried the socket of the central incisor, the other that of the lateral.

In those cases of cleft palate in which an extra incisor was present, its socket was *invariably in the mesial portion* along with that of the central, showing it to be the second incisor of the typical dentition.

REFLEX FACIAL PARALYSIS.*

By W. M. GABRIEL, M.R.C.S.

(Concluded from page 360)

Let us now consider the theories which have been brought forward to explain reflex paralysis in general, and then see if any will account for the production of facial paralysis.

Erb, writing in Ziemen's "Encyclopædia of Medicine," says :—

"Attempts have been made to explain the origin of reflex paralysees on known physiological and pathological principles, but no generally accepted explanation has yet been advanced nor will, in probability, any be discovered, since there appear to be many modes of origin of reflex paralysees."

Brown-Séquard claims to have demonstrated that reflex contractions of the blood vessels of the medulla takes place and that paralysis results from blood deprivation—paralysis from reflex anæmia, *i.e.* from reflex vascular contraction producing anæmia. The blood vessels can contract with energy on the application of a stimulus or excitation sometimes to the extent of a real and prolonged spasm. In the vessels of the pia mater of the spinal cord, he is said to have shown that the vessels contract when a ligature is applied to the hilus of the kidney, or when a similar operation is performed on the blood vessels and nerves of the supra-renal capsules. Generally in these cases, the contraction is much more evident on the side of the cord corresponding to the side of the irritated nerve. The occurrence of paralysis when contraction of these vessels takes place is not hard to understand if we remember that nerve substance is complex and that blood is a necessary ingredient for its integrity. Let the blood supply be deficient and its function is gone. A good example of this is seen when the carotid artery is tied and a hemiplegia quickly follows; this is speedily recovered from when there is a fresh supply of nutrient material.

Again these experiments of Brown-Séquard are supported by other physiological evidence. More than fifty years ago, Cohnheim extirpated the kidney from living dogs, with the effect of instantly producing paralytic weakness of the hind

extremity operated on. Brown-Séquard found the same result on extirpating either a kidney or a suprarenal capsule. Dr. Lewisohn, of Berlin, repeated Cohnheim's experiments, but without being able to confirm them. He found, however, that by pressing the kidney firmly between his fingers, he induced a complete paralysis with loss of reflex irritability, which lasted as long as the pressure continued.

Aitken in his "Science and Practice of Medicine," speaking of the paralyses which sometimes follow gonorrhœa, disease of the kidneys, etc., says: "It is quite legitimate to conclude that irritation of these parts from disease, may produce a paraplegia by causing contraction of the blood vessels of the cord, similar to those which took place in the experiments of Brown-Séquard. There are again other reasons which show that such paralysis is due to reflex action and probable contraction of blood vessels; viz., the fact familiar to surgeons, that chills, tremors, and even convulsions are often connected with catheterism.

Now if irritation acting on the peripheral terminations of the 5th conducted upwards, could cause contraction of the vessels supplying the roots of origin of the facial, or more likely the facial nerve itself (since the symptoms observed are those of a lesion affecting the trunk of the nerve and not its central origin), we should expect to have the muscles supplied by the nerve paralyzed, and the extent of the paralysis to vary according to the situation of the anæmia so produced. This explanation, however, like all the others offered is not altogether satisfactory, since it does not explain why the paralysis should occur in some, and not in all cases where sources of irritation exist.

Jaccard believes that reflex paralysis may be due to over excitation and exhaustion of the cerebral ganglion.

Charcot maintains that the peripheral irritation produces an inhibitory effect on the nervous centres.

Leyden holds the opinion that inflammation starting from the peripheral terminations of a nerve may travel upwards, so as to involve higher centres, "neuritis ascendens." Inflammation following the course of the 5th to the sphenopalatine ganglion, and thence along the great petrosal nerve

to the facial, would account for paralysis of the muscles supplied by the nerve in cases where there is evidence of inflammation existing around teeth or stumps.

Salter explaining the case I mentioned as to be found in his "Dental Pathology and Surgery," a case in which the right side of the face, the right arm, the right optic nerve were paralyzed, and in which there was also some loss of hearing on the right side, says:

"The symptoms appear to have resulted both from immediate implication of nerves, and from their reflex action. The facial palsy was no doubt produced by entanglement of the portio dura in plastic inflammatory products about the parotid region; the blindness may have been caused by a similar complication of the optic nerve in its course. The paralysis of the arm was unquestionably reflex; the deafness perhaps arose from some tumefaction of the auditory passages."

There is evidence, however, that quite independently of an ascending inflammation, circulatory and inflammatory trophic disturbances in the central segments of the nervous system may be produced by reflex action. Thus Tiester found that after contusion of the sciatic nerve in a rabbit, a circumscribed myelitis appeared at its roots whilst the intervening portion of nerve appeared entirely free from change. So also Feinberg in a series of experiments on rabbits saw inflammatory softening of the spinal cord, arise at various periods after violent peripheric irritation of the nerves (cauterization of the sciatic, refrigeration with the ether spray), which caused death, preceded by symptoms of paraplegia, incontinence of urine, etc. In all cases the central part of the sciatic remained free from any inflammatory alteration.

If in a similar manner irritation acting on the peripheral terminations of the 5th can cause inflammation of the facial in the aqueductus Fallopii, from the swelling of the nerve and its consequent compression in its bony canal, we have another way in which the paralysis may be accounted for.

None of these theories, however, appear to me to fully account for the production of these paralyses, and I must confess that I am unable to comprehend how they are produced.

As regards the last case mentioned, I should say that Dr. Lauder Brunton to whom I related it, is of opinion that by opening the mouth very wide, the facial may have been stretched and so paralyzed. I cannot myself hold with this view, as, if so, why does not facial paralysis result whenever the lower maxilla is opened wide enough to become dislocated.

As regards the treatment of these cases, part will be the duty of the physician, and part of the dental surgeon. The general principles of treatment are:

(1) To remove the source of external or peripheral irritation causing the paralysis. This will be the office of the dental surgeon, who should remove all stumps, dead teeth, and teeth with exposed nerves, and fill all others in which caries are present.

(2) To improve the nutrition of the nervous centres. This as well as the next head will be the duty of the physician. Various tonics, especially strychnia and iron have been given for this purpose.

(3) To prevent the ill effects of rest on the paralyzed nerves and muscles. This is best met by the employment of electricity and shampooing of the face. Two or three applications of ten minutes each in a week are sufficient, but above all things it is necessary that the primary disease (causing by its persistent existence the paralysis) should be cured or mitigated. As regards the contractions which sometimes follow facial paralysis, and are said by some to be due to the employment of electricity, Wilks says: "When a facial paralysis has lasted some time, the same changes may take place as in other muscles, that is they undergo contraction, and the face becomes drawn up on the affected side. I have more than once heard the contraction attributed to the protracted and indiscriminate use of galvanism, but there is no reason to suppose this. Inasmuch as in every chronic case such treatment would have been adopted, the inference has been very naturally drawn."

(4) The eye should be kept free from the irritation likely to be caused by particles of dust, etc. A shade may be worn or any other mode of protection adopted.

SUPPLEMENTAL REPORT ON TREATMENT OF PYORRHŒA ALVEOLARIS, WITH NOTE ON EUGENOL AND SANITAS OIL.

By A. W. HARLAN, Chairman.

(Continued from page 856.)

I direct the patient to refrain from brushing the gums with a stiff brush and from fingering or squeezing them during treatment. I discontinue the use of *Pinus canadensis* prescription when I begin the treatment of the pockets. Loose teeth are wired together with fine binding wire (tinned); or silver platinum, or gold wire may be used. The patient in the beginning is required to appear once in four days. When constitutional treatment is called for, which is seldom necessary, the patient is placed under such appropriate treatment as the case demands. The injection of H_2O_2 is discontinued when suppuration has ceased. I frequently prescribe for use at this time a dentifrice in the form of a paste, as follows :

R.—Precip. chalk,
Powd. orris root, aa, ʒ ii
White castile soap,
Powd. borax, aa, ʒ ss.
„ myrrh, ʒ ii.
Honey and glycerine, q. s. to make a soft paste.
Colour, rose pink.
Perfume to suit.

To be used before retiring and after breakfast on a brush not dipped in water and not too stiff.

If desired or needed I add to the prescription twenty drops of eugenol. Generally this will be found a desirable addition. After the fourth or fifth visit the interval between appointments may be lengthened to a week, then to ten days and finally to two weeks.

As elsewhere stated,* I have found that, in all acute cases of pyorrhœa associated with pain, iodoform made into a paste by adding oil of cinnamon or eugenol until of the consistence of thick cream, is an excellent anæsthetic. It is used

* *Detnal Cosmos*, October, 1883, p. 517.

by packing the paste into the pockets, directing the patient to return in three or four days. I have had equally good results in painful cases from the injection of weak solutions of chloride of aluminium, one to three grains to the ounce of water. As soon as the inflammation has subsided these are to be discontinued.

I have no doubt that there are other equally useful remedies in this stage of pyorrhœa (iodo-chloride of zinc, chinoline tartrate, saturated solution of iodine in wood creosote, iodoform and eucalyptus, dilute alcoholic solution of menthol, etc.). However, from a long and persistent use of the medicaments first mentioned, up to date I give them the preference. During the period of consecutive treatment of these cases the patient must keep the mouth scrupulously clean and pay attention to correct rules of hygiene.

The practitioner who desires to succeed in curing pyorrhœa must be a heroic surgeon, and a faithful therapist. Lacking enthusiasm, not doing faithful work, or neglecting to impress the patient with the necessity for strictly following his directions, he must fail; but believing in the treatment he proposes, fully conscious of its importance, and patiently proceeding in the face of all obstacles, neglecting nothing essential, success will crown his efforts.

EUGENOL AND SANITAS OIL.

By request of Section VI. the chairman was deputed to present a brief statement of the properties and uses of eugenol and sanitas oil.

Eugenol is one of the active principles of *oleum caryophylli*, and is known in the Dispensatories and by chemists as eugenic acid. It is prepared by decomposing eugenate of potassium with sulphuric acid, and is afterwards rectified, when a colourless oil of the specific gravity of 1.076 is obtained. It has an odour of oil of cloves intensified, and possesses a sharp and penetrating taste. The chemical composition is $C_{10}H_{12}O_2$. It is not decomposed at ordinary temperatures, and has no tendency to become thickened by exposure to the air, or to precipitate a sediment. It may be diluted with water—which is preferable—or with alcohol. Its potency as a parasiticide is retained best in aqueous solution.

The dental uses of eugenol so far have been limited. When applied to an exposed or nearly exposed pulp the pain from exposure is greatly lessened and frequently ceases altogether after a minute or two. If the cavity has been washed with a solution of sodæ biboras previous to its application, it is probably the best dressing for a slightly inflamed or congested pulp that we possess, not excepting the various iodoform pastes. It may be injected through a fistulous tract and the root sealed at the apex immediately in all alveolar abscesses of recent occurrence, no further treatment being necessary; but it is imperative that the root should be thoroughly filled. I have injected two drops into the interior of an epulis and in three weeks the epulis had disappeared. As a dressing for root canals after the removal of a recently destroyed pulp, it will and should supersede all of the powerful coagulators of albumen. Diluted with water—1 part of eugenol to 1000—it is an elegant and agreeable dressing injected into the pockets of pyorrhœa, and can be substituted in that proportion for H_2O_2 in cleansing the pockets. With proper precautions it may be injected full strength into a blind abscess after it has been cleansed by using H_2O_2 . In such cases the root-canal should be sealed loosely with cotton saturated with it. Other uses of eugenol will suggest themselves to those who are engaged in experimental therapeutics.

Eugenol in full strength will coagulate albumen. It is a powerful germicide, and not dangerous to human life, as the ordinary dose is much larger than would be used in treating a dozen abscesses at one sitting.

Sanitas oil is obtained by the oxidation of oil of turpentine floating on water by directing a stream of heated air on its surface. It contains camphoric acid and peroxide of hydrogen. The oil possesses oxidizing powers equal to a ten-volume solution of H_2O_2 and may be considered to be a convenient method of storing H_2O_2 , as we have in this product a germicide of the first rank combined with a volatile oily dressing, which is disinfectant, antiseptic, and not poisonous. It is non-irritating and has an odour similar to fresh pine, which is not disagreeable. The odour may be

disguised by adding the oil of either gaultheria, cinnamon, or sassafras. Eugenol or eucalyptus will not disguise the odour except in larger volume than the sanitas.

It has been used to inject pyorrhœa pockets ; in the treatment of alveolar abscesses—non-fistulous—and as an ingredient of mouth-washes ; for dressing foul ulcers, wounds, ulcerated sore throat, and as a dressing over exposed pulps, and for injection into abscessed Antra. It is soluble in alcohol and ether, and some of the essential oils—not readily so in the latter. My use of it has been confined to sixteen cases of various forms of alveolar abscess—so far with success—and semi-occasional use of it in the above-mentioned list of diseases.

Both eugenol and sanitas may be procured in this country—Schuchardt's and Merck's eugenols are reliable, and sanitas is manufactured by the Sanitas Co., of London, England. Sargent, of Chicago, imports both preparations.

(To be continued.)

FILLING PERMANENT TEETH OF CHILDREN.

By ~~Dr. C. M. Marshall~~ W. Geo Beers

(Continued from page 352).

While we cannot, then, weigh out earthy phosphates by measure and expect them to be digested and assimilated as readily as water will be absorbed by a sponge, we can expect this from such preparations as the syrup of lacto-phosphates,* as well as the easily assimilated diets which contain them. Every day the phosphates and other salts are excreted by the perspiration, the fæces and the urine, and in the latter especially there is a large excretion as a coincidence or consequence, perhaps, of pregnancy. This does not imply that lime-salts are too abundant. It does not mean lack of nutrition or assimilation of the existent element, but a natural process ; not an excess but a waste of matter which has become incompatible with digestion ; and instead of indicating that the system has too much lime, or will not appropriate

* One tablespoonful every day for a month, then discontinued for a month, as advised by Dr. Cushing, of Chicago.

what it has, it shows a direct need for it. Blacke, of Paris, in experimenting upon the action of the phosphates' submitted a pigeon to the test of food in which they were absent. Its appetite, weight, and activity were diminished, and the fact may be noticed that it excreted more phosphates than it absorbed. The rapid loss clearly indicated the need of lime-salts, and when these were furnished they were assimilated in spite of the quantity being excreted, and the pigeon regained its appetite, weight and activity. In face of the evidence we possess, it would be a disastrous theory to propagate the idea that diet has no direct influence upon the origin as well as the development of the teeth. The consulting embryologist of the future will go further. He will at least do as much as the Grecians did, by keeping his patients under the impressionable influence of art, music, and sculpture. The medicines for the mind will be as much investigated as those for the body; the value of sunlight and sun-baths, of scrupulous cleanliness of body and repose of mind—the antidotes to modern nervousness. These will be made to contribute to the growth and development of the embryo. We live in an age when the most amazing revolutions in science and discovery are received with almost perfect complacency, and it would not startle us if some modern Alphonso of Castile, who said he could have made the world better had he been consulted, would really demonstrate his ability to improve the human embryo.

I would like information upon one point. Anyone who has examined the deciduous molars previous to eruption may have found structural defects,—fissures in the grinding surfaces that look exactly like fissures round the same teeth erupted for months. Of course, this examination must be *post mortem*, so far as the human teeth are concerned; but the investigation might be made upon dogs by vivisection. The frequency of caries in the first permanent molar, especially in the lower jaw, has been shown by Magitot, in 10,000 cases; to exceed that of any other teeth; while in 1,000 cases in the temporary set the same tooth in the same jaw is most frequently carious. Our lamented friend, Dr. T. B. Hitchcock, published in the *Canada Journal of Dental*

Science, in 1871, a comparison of this table, prepared from his own record of 10,000 cases. While it varied in some respects, its conclusions were the same with reference to the greater frequency of decay of the lower first molars. Several theories have been proposed to account for this fact, the most popular being that the period of intra-maxillary evolution of these teeth is so prolonged and coincident with a period most likely to be disturbed by diseases,—in the case of the deciduous teeth, of the mother ; in the case of the permanent, of the child. With our present knowledge it seems reasonable. But if we consider the character of the superimposed gum, which for months before eruption is tense and inflamed, can it be possible that, as the result of the local irritation, the normal character of the mucous obtains an acid reaction, and that this and other acids may reach the crown of the undeveloped tooth, and slowly act upon the lime-salts of the enamel in imperfectly calcified fissures? Nasmyth's membrane would not protect the fissures, because we know that it can be penetrated by acids. It is easy to understand why acids that would thus act in the fissures of molars when it would not in the smooth surfaces of the other teeth. The condition of a child's mouth in febrile states of the body, the irritation peculiar to that part where so many teeth are growing, must vitiate the buccal fluids. I was surprised in testing the saliva of nursing children before the eruption of the teeth, to find a decided reaction in every case. Infants do not swallow every particle taken into the mouth. The cheeks, the maxillæ folds, the tongue, retain portions of soft food, and these sour and become acid. One of the national customs among the French Canadian peasantry is to put a small cloth bag of bread and sugar, soaked in milk, into the mouth of infants to keep them quiet. Frequently the result is to cause vomiting and an excess of acid in the stomach. I doubt if it is generally realized to what extent acids are present in the mouth before the eruption of the teeth. Now, I venture to believe that just as easily, if not more so, as iodine and aconite painted on the gums can reach and act upon the periosteum, these acids can reach and act upon the crowns of the undeveloped molars.

As I propose in a future paper, with your permission, to discuss the specific results of the diseases of pregnancy and infancy in their effects upon the teeth, I will not allude to the subject here. To my mind, neither physicians nor dentists will ever do all that could or should be done. It remains with the mothers to learn more about the origin and development of the teeth, and to take as much interest in the embryology of their future offspring as they do in house-plants which they grow from the seed, or as some do in the breeding of pug dogs.

The care of children's teeth after the eruption ought to occupy more attention. It falls naturally upon the mother ; but it ought to occupy as much of our thought as treatment. Every one of us has seen hundreds of disheartening cases ; children of eleven and twelve years having twenty or more carious cavities in the teeth,—that discouraging decay between the lower incisors which marks caries of embryonal origin. It is remarkable how the large proportion of these cases can be traced back to disturbances and diseases during pregnancy, or in the early months and years after birth.

One of the best means to make parent and child value the teeth which should last for ever is to make them realize the importance of those which should last for six or seven years during which time the child is entirely dependent upon them for mastication. Every mother ought to know the process by which the deciduous teeth are removed by nature. My experience is that most parents think they are shed as a canary gets rid of its feathers, or a deer its antlers. Some imagine they are lost as a crab loses its shell ; or that it is a process of moulting, to be continued at intervals during growth, like that of the lobster. People are prepared to believe anything about anything of which they know nothing, and they ought to be surprised by being taught the truth.

The popular superstition that the deciduous teeth are only of temporary importance, and that their premature loss is only one of appearance, not of function, like all superstitions, was founded upon ignorance, and is receiving its death-blow in this country. But, as a rule, the first eight or twelve years of a child's life is too often a time of neglect, so far as the

teeth are concerned ; and if there is any time when every tissue and organ should have the utmost care, it is when they are in rapid growth, when vitality depends upon what goes into the mouth, and from the mouth into the stomach. As a rule, children are never taught the object of their teeth and the need for their exercise. Example in this fast age of quick eating is rarely given, for it may be said of most of us, as Plato said of the citizens of Agrigentum, "They eat as if they had not an hour to live." Mere eating is not mastication. Let this be the first idea of the function of the deciduous as well as of the permanent teeth,—that they are intended as human mills to prepare the food for digestion, and that as machinery rusts out quicker than it wears out, so teeth which are not exercised by mastication are more predisposed to decay than those which have plenty of hard food to grind. The lessons of hygiene are so simple that they are rarely observed, just because of their simplicity,—daily use of the badger-hair tooth-brush, precipitated chalk, and Castile soap. Mothers ought to have mouth-mirrors, and ought to examine the child's teeth every month of every year. I have seen children who have looked forward to the eruption of a tooth as a happy event in their lives. Why should not this be a life-lesson of pleasure to a child from the time it has intelligence enough to watch for its dental development? It is taught to take care of its hair, its skin, its nails, its toes, its eyes. A child's deciduous teeth are as much a work of the Creator and as important for the time being as the health of its hair, its skin, its nails, its toes, or even its eyes. If nature made any mistake, however, it was in giving us so many teeth that they are not only undervalued, but so easily replaced. If a child had twenty eyes and only two teeth, the custom which governs so many parents in the care of them would be reversed, especially if the twenty eyes were temporary, to be replaced by thirty-two successors, and the two teeth had to be carried to the grave. If we cannot grow better teeth for children, we must do more than we have yet done to keep the poor ones they have. Even in this direction, I feel we will never be able to do the best for their teeth until the great discoverer comes with the

permanent translucent soft filling. Children, even of an older growth, will then have one of the miseries of life ameliorated, and the structural poverty we regret will be met by some after compensation that will do much to lessen the need for prosthetic dentistry.

I should have concluded long ago, but I must do so now, and with reiterating my conviction of my own ignorance. Confucius has a fine thought: "What you know, to know that you know it, and what you do not know, to allow that you do not know it,—that is knowledge." I have tried to show you how little I know that I may the sooner know more. No doubt you will assure me that in this I have splendidly succeeded.

COMMON SENSE MANAGEMENT OF THE TEETH.—The Victoria Dental Hospital of Manchester issues the following directions to the patients:—1. It is of the utmost importance that the teeth be kept perfectly clean. 2, Children should be taught to *rinse* the mouth morning and night, and to begin the use of the tooth-brush at an early age. 3, The teeth should be brushed morning and night. 4, Before using the tooth-brush, it is well to rub it lightly across a cake of soap and then to dip it into precipitated chalk. The teeth should be brushed up and down, as well as across, particular care being taken to clean those parts of the teeth nearest the gum, for it is here and between the teeth that there is most danger of decay. 5, All rough usage of the teeth, such as cracking nuts, biting thread, etc., should be avoided, as by such practices even good sound teeth may be injured. 6, When decay is first observed, advice should at once be sought before the teeth become painful. 7, It is of the greatest importance that children should have their teeth regularly examined by a Dental Surgeon, in order that the First Set may be properly attended to and opportunity afforded for the timely treatment of the Permanent Set. 8, As soon as children are old enough, they should be fed on "whole-meal" bread, milk, porridge, pease-meal, etc. These are much more wholesome and nutritious than white bread, tea, and coffee. Excessive indulgence in sweets should be avoided. We commend these rules for a wider use than intended by the Dental Committee.

Reflections from the Surgery.

CHRONIC SUPPURATION IN THE ANTRUM.

By MORTON SMALE, M.R.C.S., L.D.S.,

Dental Surgeon to Westminster Hospital, and Dean of the Dental Hospital of London.

Mr. Smale reports in the *British Medical Journal*:—Three cases of antral suppuration came under my care. They were treated somewhat differently from the method described in most text-books, and with so good a result, that I think an account of the cases might be of interest. They are, in most surgeons' hands admittedly difficult to cure, and treatment generally extends over a considerable period.

The usual treatment is to open the antral cavity freely, if possible, through the alveolus of the bicuspid or molar teeth, and teach the patient to wash out the cavity by the forcible contraction of the buccinators and orbicularis oris on a dilute disinfectant held in the mouth. I have treated many cases in this way, but always with very unsatisfactory results. I resolved therefore to be a little more heroic in my treatment, and instead of the dilute disinfectant to use a powerful one. Having removed all offending teeth, with none of which the disease appeared to be connected, the cavity was freely opened through the socket of one of the teeth, and freely syringed with a ten per cent. solution of carbolic acid. The cavity was plugged with lint soaked in a twenty-five per cent. solution of carbolic acid. This was allowed to remain twenty-four hours, the opening into the mouth being closed by a plate in two cases, and by a plug of cotton wool soaked in gum mastic in spirit in the third. This was renewed for several days after syringing the cavity with a ten per cent. solution of carbolic acid, until all foetor (which was of the characteristic kind found in these cases) had disappeared.

From that time for about a month, the cavity was syringed every other day with a ten per cent. solution of carbolic acid, but there was no return of the foetor. The pus in the first instance was full of bacteria, and had for months in each case, been a source of great discomfort and anxiety to the patients.

They looked anæmic, and were losing flesh. All appetite had gone, and they were afraid to go into society. Each case had to be treated with slight differences, but the above treatment is sufficiently accurate to apply to all. I append some notes of one of the cases.

The patient was Miss M., aged 40. Her history was good. There was no specific taint. She was very anæmic, and much thinner than previously; had no appetite, and was always feeling sick; she had a disgusting taste in her mouth at all times, and occasionally a discharge from the nostril. There was a collection of foetid discharge at the back of the throat every morning. She had noticed it for quite six months, and had been treated medically, but with no good result. The breath was very offensive. There was no ozæna. The face had been slightly swollen several times just under the eye. There was very little pain, except when the swelling was coming. I removed several roots of teeth, and opened the cavity through the second bicuspid socket, making the opening as large as possible. A large quantity of very foetid pus was discharged. I syringed the cavity freely with a ten per cent. solution of carbolic acid, and plugged it with lint soaked in 25 per cent. solution of the same. On April 7th I removed the plug, syringed, and applied a fresh plug. There was very little pus but still foetor. On April 8th, there was slight improvement. The treatment was continued. On April 12th she was much better; no foetor. The plug was removed permanently. The cavity was syringed with ten per cent. solution of carbolic acid. The syringing was continued every other day for a month. By May 20th, it had healed; there was no discharge, and the patient looked and felt better. On February 6th, 1885, I saw Miss M.; she was then quite well.

A BRANCH DENTAL HOSPITAL FOR LIVERPOOL.—We understand that it is proposed to establish in the North end of Liverpool a Branch Dental Hospital. It appears that the extension of the town in this direction is so rapid that a want of such an establishment has made itself unpleasantly felt, and the present scheme has accordingly developed itself.

British Journal of Dental Science.

LONDON, MAY 1, 1885.

A CODE OF ETHICS FOR DENTISTS.

The American Dental Association has issued its Amended Constitution and append *A Code of Ethics of Dentistry*. So entirely is the code in harmony with the feeling of the more thoughtful and educated portion of the profession in England that we propose placing it before our readers with the earnest wish that

* * * perhaps another
* * *

Seeing, may take heart again.

That some sort of a general expression of feeling among English dentists should find utterance concerning the Ethics of the Profession, is especially necessary at this time. One cannot travel by rail, or even invest in most humble organs for the dissemination of news without being shocked by staring advertisements and puffs setting forth how Mr. this, that or the other, supplies better teeth than his neighbour. Or has the virtue of extreme "cheapness." Whatever catch-penny phrase is used, they all have one refrain, "Come to me for *I am the dentist*." It is absurd to suppose that this sort of thing is confined to those who have never invaded the portals of Lincoln's Inn or those of the Colleges of Scotland and Ireland. It is not so. The Licentiates are in this respect also found tripping, "'Tis true, pity 'tis, 'tis true." And when we find the large majority of the licentiates reprobating this scandalous resort, this most reprehensible practice, it only makes the act of the unprincipled few the more heinous. But why is such conduct heinous? Is not a man justified in gaining a living in these hard times, it is asked? The excuses that such make, however specious, must fail to convince right-minded men. They cannot show that even if they fill their pockets, they are justified by that unanswerable argument "Success." The public are daily becoming more alive to the fact that dental work is of two kinds—good work and bad work.—

The former needs only its own worth to commend it ; scamped, unskilled charlatanism takes much in the way of flourish of trumpets and circular-distribution before the gullable members of the laity become egged into the clutches of the dental vultures. But unless the vile practice of forcing the whole profession into the mire by advertisements is suppressed, there is no shadow of doubt that the profession as a whole cannot assume the rank its leaders claim for it. While Dentists vie with small retail dealers, they will rest under the same social ban. They must agree to this for it is inevitable, and hence we are all placed in the unenviable position of being sent to Coventry, because a few choose to misbehave. The remedy, however, is not easily found, for appealing to the better nature of an advertising quack is like seeking grapes from thistles. To seek aid from the Licensing bodies is not an encouraging pastime, as one asks for redress and meets with the politest and most plausible of set phrases but that is all. That much can, however, be done by the weight of a more vigorous individual expression of feeling is manifest. Such an expression would not only educate the laity and so put them upon their guard against chicanery, but would in time alienate the victims from the mendacious practitioner. Were a Code of Ethics widely disseminated and all honest practitioners bound themselves to observe its articles we should have advanced one step towards suppressing a system which is as disgraceful as it is prejudicial.

CODE OF DENTAL ETHICS.*

ARTICLE I.

THE DUTIES OF THE PROFESSION TO THEIR PATIENTS.

SECTION 1.—The dentist should be ever ready to respond to the wants of his patrons, and should fully recognize the obligations involved in the discharge of his duties towards them. As they are, in most cases, unable to correctly estimate the character of his operations, his own sense of right must guarantee faithfulness in their performance. His manner should be firm, yet kind and sympathizing, so as to gain the respect and confidence of his patients ; and even the

*Adopted August, 1866.

simplest case committed to his care should receive that attention which is due to any operation performed on living, sensitive tissue.

SEC. 2.—It is not to be expected that patients will possess a very extended or a very accurate knowledge of professional matters. The dentist should make due allowance for this, patiently explaining many things which may seem quite clear to himself, thus endeavouring to educate the public mind so that it will properly appreciate the beneficial efforts of our profession. He should encourage no false hopes by promising success where, in the nature of the case, there is uncertainty.

SEC. 3.—The dentist should be temperate in all things, keeping both mind and body in the best possible health, that his patients may have the benefit of that clearness of judgment and skill which is their right.

ARTICLE II.

MAINTAINING PROFESSIONAL CHARACTER.

SECTION 1.—A member of the dental profession is bound to maintain its honour, and to labour earnestly to extend its sphere of usefulness. He should avoid everything in language and conduct calculated to discredit or dishonour his profession, and should ever manifest a due respect for his brethren. The young should show special respect to their seniors ; the aged special encouragement to their juniors.

SEC. 2.—The person and office arrangements of the dentist should indicate that he is a gentleman ; and he should sustain a high-toned moral character.

SEC. 3.—It is unprofessional to resort to public advertisements, such as cards, hand-bills, posters, or signs calling attention to peculiar styles of work, prices for services, special modes of operating, or to claim superiority over neighbouring practitioners ; to publish reports of cases, or certificates in the public prints ; to go from house to house soliciting or performing operations ; to circulate or recommend nostrums, or to perform any other similar acts. But nothing in this section shall be so constructed as to imply that it is unprofessional for dentists to announce in the public prints, or by card, simply their names, occupation, and place of business ; or in

the same manner to announce their removal, absence from or return to business ; or to issue to their patients, appointment cards having a fee bill for professional services thereon.

SEC. 4.—When consulted by the patient of another practitioner the dentist should guard against inquiries or hints disparaging to the family dentist, or calculated to weaken the patient's confidence in him ; and, if the interests of the patient will not be endangered thereby, the case should be temporarily treated, and referred back to the family dentist.

SEC. 5.—When general rules shall have been adopted by members of the profession practicing in the same localities, in relation to fees, it is unprofessional and dishonourable to depart from these rules, except when variation of circumstances requires it. And it is ever to be regarded as unprofessional to warrant operations or work as an inducement to patronage.

ARTICLE III.

THE RELATIVE DUTIES OF DENTISTS AND PHYSICIANS.

Dental surgery is a specialty in medical science. Physicians and dentists should both bear this in mind. The dentist is professionally limited to diseases of the dental organs and the mouth. With these he should be more familiar than the general practitioner is expected to be ; and, while he recognizes the superiority of the physician in regard to diseases of the general system, the latter is under equal obligations to respect his higher attainments in his speciality. Where this principle governs, there can be no conflict, or even diversity of professional interests.

ARTICLE IV.

THE MUTUAL DUTIES OF THE PROFESSION AND THE PUBLIC.

Dentists are frequent witnesses, and at the same time the best judges, of the impositions perpetrated by quacks, and it is their duty to enlighten and warn the public in regard to them. For this and the many other benefits conferred by the competent and honourable dentist, the profession is entitled to the confidence and respect of the public, who should always discriminate in favour of the true man of science and integrity, and against the empiric and impostor. The public has no right to tax the time and talents of the profession in examinations, prescriptions, or in any way, without proper remuneration.

GENERAL MEDICAL COUNCIL.—A meeting of the General Medical Council has been summoned for May 12th, at 2 p.m. A meeting of the Executive Committee will be held on the day before, at 1. 30 p.m.

THE DEATH OF MR. MARTIN COATES, of Salisbury, is announced. Mr. Coates was an earnest advocate of the dosimetric administration of anæsthetic agents.

ERICHSEN'S "Surgery" is in course of translation into Spanish, with copious notes mainly on recent advances in French Surgery.

THE INDEX MÉDICUS.—We had occasion to express regret that this useful publication had been unavoidably relinquished, we have now the pleasure to announce its reappearance under the management of Mr. Davis, of Detroit.

DENTAL CHARITY ABROAD.—The teeth of all children attending the communal schools in Brussels are examined by order of the State, and during the year 1882-83 no fewer than 1,250 pupils required the services of the dentists.

A NEW LOCAL ANÆSTHETIC.—The methyl chloride has been latterly employed in Paris as a local anæsthetic. It was used as a spray, care being taken that the spray falls across rather than directly upon the part, as there is a liability of erythema, painfully increased sensibility of the part, and even superficial sloughing. It has been used mainly for muscular and nerve pains but it would seem a promising agent for dental work, as it possesses the advantage over cocaine that its action extends more deeply.

ROTATING A TOOTH.—Dr. Chupein says, according to the *Southern Dental Journal*, to rotate a tooth where there is no lack of room, he made a ring of very thin platinum, which was so soft that it could be easily burnished, down to the plaster model without in the least wearing this, and made to fit perfectly. He removed it carefully, and dropped a drop of plaster of Paris mixed with water and sand within it, so as to

be able to handle it, without bending. Pieces of plate gold were now melted all over the platinum ring, so as to stiffen it. Two small holes were then drilled at suitable points on the ring. An old vulcanite tooth was broken, and the headed pins saved from it were soldered into these holes. This constituted the appliance. To apply it to the tooth in the mouth, a napkin was nicely placed in the patient's mouth and the tooth wiped perfectly dry with small pieces of spunk. It (the tooth) was then rubbed all over its surface with a soft stick charged with finely-powdered pumice stone, and again wiped dry with pieces of spunk or spongoid. It was now coated with liquid glacial phosphoric acid, while an assistant mixed some quick-setting phosphate of zinc—not too stiff—and coated the inner surface of the ring. The ring was then quickly placed on the tooth in its proper position, and held until the material set hard. To the projecting headed pins, small rubber rings were attached, stretched and ligated to such tooth as best seemed to effect the twisting of the tooth in position. This plan was similar to Dr. Long's—Dr. Long's was much simpler. He was fearful that, as the oral teeth are all, more or less, cylindrical at their necks, that Dr. Long's twisted wire would slip, and thereby the object would be defeated.

MENTHOL.—“C. E. F.,” writing in the *Independent Practitioner*, says: “This agent has for some years been employed among the Orientals as a topical application in light cases of neuralgia, and more recently in this country, for a similar purpose. Moulded in small cones, or ‘pencils,’ enclosed in boxwood cases, it has been somewhat extensively sold as a ‘headache cure.’ In solution, menthol 3 ij. with alcohol 3 i., and applied with a camel's hair brush along the track of a nerve in cases of neuralgia, or even sciatica, produces a grateful and soothing feeling. So far, no account of its use (to my knowledge) within the oral cavity has been recorded, but Dr. Hungerford, a physician of Stamford, Conn., recently informed me that he had in a single instance applied menthol in solution to the gum to relieve pain from an aching tooth, and with good effect. This remark induced

me to test its merits, and I have used it in a number of painful cases of pericementitis and alveolar abscess, with gratifying results. A very small quantity applied to the gum is sufficient. I consider it a valuable addition to our list of therapeutical agents, and one that will come largely into use to allay pain in cases of peridental inflammation.

THE DENTAL HOSPITAL OF EXETER.—We have received the annual report of this Institution for the year 1885. Although possessed of a balance it appears that there has been a falling off in the roll of annual subscribers. This is one of many complaints one hears of, to the effect that the charitable public have of late withheld their support from hospitals and cognate institutions. This fact is deplorable, both because it must sooner or later prove the destruction of many useful charities and because it cripples existing hospitals in their laudable efforts at advance. Fortunately, the Exeter Hospital seems to have a brighter future, and to receive the support it so justly deserves. Its field of usefulness and its powers of amply fulfilling its duties are best instanced by the statistics which are appended :

A NEW DENTAL JOURNAL.—A fresh departure in Dental Literature has been accomplished. "Facts" is the title of a quarterly journal, which although of moderate bulk contains a fund of useful matter about things dental. The first number is good, first numbers usually are so, we shall confidently hope on January 15th, 1886, to see No. 5, and be able to say it is equally good. Double columns, although a drawback are not fatal to success.

THE MUSEUM OF THE ODONTOLOGICAL SOCIETY.—The Odontological Society has issued a supplementary catalogue of their collection. This contains brief accounts of over a hundred additions to the previous specimens. As this museum is practically accessible to the whole profession specimens which are not wanted for private museums can hardly find a better lodging than in Leicester Square.

Abstracts of British & Foreign Journals.

DEUTSCHE MONATSSCHRIFT FÜR ZAHNHEILKUNDE.

CAN EPILEPSY ARISE FROM A DISEASED TOOTH?

E. SCHWARTZKOPFF, Deut Eisenach.

It is to be deplored that the question "What influence have diseases of the teeth upon the whole organism?" given as a subject for a Prize Essay, has never been thoroughly and scientifically taken up and answered.

That certain suffering and disturbances of the nervous system are caused by diseased teeth must be admitted. One form of this reflex suffering is that common among children, viz., convulsions and sometimes cases have been known in which such reflex suffering has led to epilepsy in patients later in life. Herr Schwartzkopff, of Eisenach gives the following cases collected from Home and Foreign dental literature.

The first was the case of a young man taken into the hospital to be cured of epilepsy. When all the usual remedies had been tried for six weeks without success his mouth was examined. The molars in the lower jaws were excessively carious and of some nothing but the roots remained. He did not complain of pain in the carious teeth nor in the jaw; the affected teeth were extracted and were found to possess much thickened bulbous formed roots. In eighteen months after the extraction he had not a single attack of epilepsy although before the operation he had been attacked two or three times in the course of a day.

This case is one of peculiar interest as there was no complicated disease to account for the epilepsy, the cause of which is beyond doubt, as it ceased immediately after the extraction of the teeth.

Another case of epilepsy was cured by the extraction of a carious wisdom tooth affected with exostose.

In the German Viertelsjahrschrift, 1865, a case is described of a lady whose attacks of epilepsy became much less frequent

after the extraction of some teeth, and when afterwards all the teeth affected were removed, the fits ceased altogether. Although the connection between epileptic attacks and diseased teeth is to be accepted with more or less certainty, yet in none of these cases has the simultaneous arising of both diseases, their simultaneous continuance and disappearance been put before us in such a manner as to accept the connection between the diseases without any doubt.

Herr Schwartzkopf gives the following case in which the two diseases arose, continued, and were cured simultaneously

The patient, a member of Herr Schwartzkopff's own family, suffering great pain from the right upper central incisor had it stopped. Soon after the operation the pain returned and a swelling arose at the back of the teeth on the palate. The pain ceased after some time but the swelling remained.

After the tooth was stopped it always remained somewhat loose so that discomfort arose in biting and the swelling week by week extended farther back assuming the appearance of an India rubber ball containing matter which had to be removed daily by pressure of the finger. Ten days after the tooth was stopped the patient was seized with an epileptic fit, having never previously suffered from that complaint. This fit was followed by another and as time went on the attacks became more and more frequent and occurred at shorter intervals. During this time the swelling still remained, being about the size of a hazelnut unless not relieved of the matter when it assumed larger dimensions. After two years of suffering the patient was examined by Herr Schvartzkopff when the following conditions were found:

The tooth which had been stopped with cement was somewhat loose and very sensitive to percussion as are all teeth the pulp of which is destroyed causing chronic abscesses to form. From the teeth a swelling high up on the palate was visible which on pressure was found to contain a quantity of thin offensive brown coloured matter. When the swelling was not relieved of this the patient always became restless and uncomfortable, particularly early in the morning. It was hoped that the suffering might be allayed without sacrificing the

upper central incisor, but Dr. Hartung, to whom the case was described, advised extraction. The patient was at this time suffering from repeated epileptic attacks which were accompanied with the following symptoms, great restlessness, and excitement, flushing of the face and feeling of a peculiar pricking sensation in the under jaw, the teeth in the under jaw closing over those in the upper and a tickling sensation in the nose. These symptoms made their appearance at every attack exactly in the same manner. Then the patient would fall with a loud cry, the body stretched out, the head thrown back, teeth set and eyes staring, the face of a bluish tint and the thumbs bent. The perfectly motionless condition was soon followed by a violent movement of the extremities, contraction of the muscles and rolling of the eyes. After from five to ten minutes the body relaxed and the attack ended in a deep sleep.

All kinds of treatment were had recourse to but all in vain, and when the extraction of the tooth was decided upon it was merely with the object of getting rid of the toothache, for no idea of any connection between these epileptic attacks and the teeth had occurred either to the doctors or to the patient. In order therefore to mitigate the suffering of the patient and to relieve him of the pain from the abscess, the tooth was extracted, and from that hour until the present time, now four years ago, the patient has never had an attack of epilepsy, and the swelling gradually disappeared. The tooth had lost the third part of the root and what remained looked a greenish brown colour. The cement stopping reached to the pulp chamber which was filled with a bad smelling fluid. Whether the pulp had sunk down after the stopping or whether it had been so before the stopping could not be discovered, most probably the latter was the case.

With regard to the possible connection of the two complaints, it must be remembered that the first attack of epilepsy occurred a few days after the stopping of the tooth, that the patient had never as a child suffered from fits, that no member of his family either in the present or a former generation had suffered from epilepsy or shown any predisposition to nervous diseases; further, that two years he for

suffered continually from toothache, and that the attacks became more frequent as the chronic abscesses increased, and lastly that from the day the tooth was extracted the patient was cured.

Doubtless in this case the pressure upon the peripheral nerve caused by toothache, was reflected upon the brain organs, and gave rise to this central disturbance, so that it was not genuine epilepsy but a reflex epilepsy, and is analagous to those cases of reflex epilepsy which arise through cicatrices, swellings, &c.

CENTRALBLATT FÜR ZAHNHEILKUNDE.

HYDROCHLORATE OF COCAINE AS AN ANÆSTHETIC.

By M. MORGENSTERN.

Herr Morgenstern is of opinion that in spite of the many new anodynes added yearly to the repertory of the dentists none has yet been discovered which is thoroughly reliable as well as free from defects such as disagreeable taste and smell and injurious irritation of the tissue with which they come in contact. Every practising dentist constantly feels the need of some anodyne with which he can render a too sensitive tooth insensible without at the same time irritating the pulp, in his despair when treating a very sensitive patient he often has recourse to an alkaloid taken from the opium group although he may long have been convinced of the precariousness of such preparations. After having tried some astringent such as tannin, which sometimes proves effectual, he has recourse to an anodyne. Each dentist should make trial in his own practice of every new anæsthetic and not trust blindly to the experience of others.

Hydrochlorate of cocaine has already been used as an anæsthetic for the larynx and the eyes. Professor Schrötter published an essay a short time ago, on this substance as an anæsthetic for the larynx in which he mentioned a number of operations in the throat successfully conducted by him by this means. Many of those operated on were patients whose peculiar sensitiveness would have prevented an operation being carried on without the help of an anæsthetic.

The following cases, which are some of those mentioned by him prove the usefulness of cocaine.

In the case of Dr. N. who was 31 and very sensitive had a peculiar formation on the top of the right cartilage completely removed by means of laryngoscopic examination and the galvanic cautery.

Another patient, aged 39, had on the left side of the base of the tongue a swelling about the size of a chesnut. As a violent choking fit rendered the operation difficult for the patient, the base of the tongue was pencilled with cocaine and then the galvanic ecraseur was easily laid round the tumour and it was removed.

Herr Schrötter uses the medicament in the following solution :

Cocaine Hydr. 1, 0 Spirit Vin. Rectif. 2, 0 Aq., Dist. 3, 0, as a twenty per cent solution.

When Herr Morgenstern discovered that oculists had also used cocaine with good effect, he tried this means in various cases which his practice offered. The results which he has hitherto obtained were not always so successful as to convince him of the greater excellence of cocaine over other anæsthetics but he is still experimenting.

In the following cases he has used cocaine with various results.

Fräulein W., aged 45, had chronic periostitis in both the separated roots of the first molars of the inferior maxilla. The back root was first removed the gum having first been pencilled with a solution of cocaine. The extraction was not very painful, after twenty minutes the front root was removed. The patient suffered much pain during this operation.

2.—Baroness W., about 40 years old. The pulp of the second premolar, was laid bare on excavating the hollow. On touching it with wadding and sponge to dry the cavity the pain was great. Herr Morgenstern put a piece of wadding soaked in the concentrated solution of cocaine into the cavity kept it there ten minutes then syringed with warm water, dried with a sponge and over capped the pulp with iodine cement. Both operation were painless.

3.—Baroness E., daughter of the former patient was ten

years old. The incisor lateral superior maxillæ was hollow on the lingual side, the excavation was very painful. Herr Morgenstern used the same solution as in the previous case but with no effect. He then laid a concentrated solution of cocaine hydrochlorate on wadding covered the latter with wax and told the patient to come again next day. After taking away the wadding the sensitiveness was considerably lessened and the preparation of the cavity could be continued.

4.—Fraü B. about 40 years. The gum over mol. 1, 2, and lin. max. sup. was inflamed, the least carious movement of the three teeth caused fearful pain, mol. 3 was at the neck of the tooth. The patient had not been able to take nourishment for two days. After Dr. Morgenstern had pencilled the gum and teeth with cocaine solution, the pain was so much diminished that the patient could take some breakfast. After about two hours the sensitiveness of the first and second molars had almost disappeared on the touching.

Literary Notices and Selections.

ENAMEL FILLINGS.*

BY WILLIAM HERBERT ROLLINS.

In the August number of the *Independent Practitioner*, there is an article by Dr. E. C. Moore, on "Porcelain Facings for Carious Teeth." The writer states that owing to the lack of appreciation on the part of the patient or the want of patience in the operator, the operation is not as common as in his opinion it should be.

He then goes on to describe a case where there was a large filling in the front of a central incisor. He removed the decay and took an impression in plaster of Paris, from which he made a mould in the the same material, using this as a guide. A piece of artificial tooth was then ground to resemble the cavity in shape. This was cemented in place with Weston's cement. When the cement was hard little holes were drilled

*Read before the Boston Society for Dental Improvement, Oct. 1884, and reported in *Archives of Dentistry*.

into it and these holes were filled with gold, so, when the operation was complete, the porcelain was entirely surrounded with gold.

The use of enamel fillings has been an everyday affair with me for the last six years, so I shall venture to bring the matter before you as I think my methods are better than the one of which I have spoken. In the year 1880, having brought enamel and porcelain filling to a point where I hoped it would be found simple enough to receive attention from dentists; I read a paper on this subject before the Society for Advancement of Oral Science, June 21, of that year. This paper was then sent to the *Boston Medical and Surgical Journal*, but was returned. It was then sent to the *Lancet* and accepted, but never appeared. No further attempts were made to bring the matter before the profession. In 1883, however, at the solicitation of a friend, I made an abstract of the original paper. This was published in the *Boston Medical and Surgical Journal*, April 2, 1883. I refer to these matters because I do not wish to be accused of keeping to myself what I believe will be found to be a valuable method of filling teeth.

Not long ago Dr. Chandler said to me that dental articles published in a medical journal were buried without even a headstone to call attention to them. This decided me to resurrect this one. I began to use pieces of artificial teeth for filling in the autumn of 1873, and since that have made many experiments to make the method an easy one.

In preparing the cavity for enamel, the walls should be about perpendicular with the bottom. They should be cut with more care than is employed in excavating for a gold filling. The bottom of the cavity should be as flat as possible. As the ordinary flat ended burs do not cut well on the end, I have devised new forms for the cutting ends.

Mr. Hodge has made after my patterns burs cut in several different forms upon the ends, which are admirable for this purpose. When the cutting is done the cavity should be made perfectly dry and covered with a thin film of some mineral fat such as vaseline. To make a perfect impression of the cavity requires care. After considerable experiment

the following preparation has been devised for this purpose.

Gum Mastic	-	-	-	-	-	100	parts
Paraffine	-	-	-	-	-	50	parts
Plumbago	-	-	-	-	-	50	parts

The ingredients are to be melted together, except the plumbago, which is not to be added till the gums are fluid. The mixture should then be well stirred and when it has cooled made into sticks about quarter of inch in diameter and one inch long. To take the impression the end of one of these sticks is to be softened a little on the surface by heat and then pressed into the cavity. The cold part of the stick acts as a piston forcing the material into every part of the cavity. After the impression is perfectly cold it is removed from the mouth. An electrotype copy is to be made from this, and for this purpose a piece of fine copper wire is wound about it. The surface may be made a better conductor of electricity by blackleading it, or a thin film of silver can be deposited. It is hardly worth while to go into this in detail as directions for electrotyping are to be found in so many books. Briefly stated, whatever part of the impression stick is not to be covered with copper is to be "stopped off," the impression then placed in the sulphate of copper solution and the battery connected. In about three days the copper will be one-sixteenth of an inch thick. The mould is then to be removed from the solution. With slight heat the impression material can be drawn out, leaving the mould clear. Next, drill a small hole in the back. The subsequent treatment depends upon whether the mould is to be used for enamel or porcelain. The subject here, therefore, divides itself into dental enamel and dental porcelain.

By enamels I mean mixtures of silica, an alkali and oxide of lead. To these are added other substances to make the enamel translucent and give the colour.

Dental porcelains are mixtures of silica, clay and felspar with suitable colouring matters.

Let us suppose that we have decided to fill the cavity with enamel. A piece of No. 30 gold foil is placed over the copper mould and by means of a ball of clean cotton carefully pressed into contact with all parts of it. Care should be

taken that the pluggers used do not push through the cotton and make holes in the gold, for if the gold surface is broken the enamel will penetrate to the copper. If this happens the enamel will not leave the mould. The object of the gold lining is two fold, as it prevents adhesion between the enamel and the mould and also prevents discolouration of the enamel by the copper.

(*To be continued*).

DENTAL JURISPRUDENCE.

By DR. J. ALLEN OSMUN, New Jersey.

(*Continued from page 375.*)

That we often play an important part in the drama cannot be disputed, and, in the position of professional men, we are often criticised. For instance, Dr. Samuel Sexton, in a series of articles published in the *Medical Record*, said that, "It was believed that since dentistry had become such a popular business, and diseased teeth had been so carefully retained in the jaws, through their influence, especially among the better-to-do, nervous diseases about the head were becoming alarmingly common. The very custom of wearing false teeth in the mouth attached to vulcanite, rubber, celluloid, and other plates, was also an evil of vast proportions; indeed, he sometimes thought that the evil done through ill-advised dentistry was greater than the possible good arising from the work of the more capable dentists."

This shows you what a position we are placed in. He condemns the leaving of pulpless teeth in the mouth, and then condemns the wearing of substitutes. I admit that he qualifies his statement at the last by saying the "more qualified dentists." The point I desire to bring out is that, if writers of Dr. Sexton's abilities find such charges to make, what are the laity liable to charge, when something has not gone to their entire satisfaction? And if they can bring medical men who would be biased by such articles as the one from which this sentence was quoted, will it not behove us to be ready to fight fire with fire?

Our testimony should be the colourless light of science, brought to bear upon any case when it is summoned. It

should be impartial, unprejudiced: there should be no half truths uttered, but the benefit of the knowledge acquired, perhaps by years of study and observation, should be freely given. Take a case so commonly cited to show how important professional evidence is. Stained garments are placed in the hands of the expert chemist to decide the significance of these stains by scientific tests. His chemical re-agents show them to be blood stains. But to leave the matter here might be to utter a falsehood in the name of science. He examines with the microscope, and testifies that the size and shape of the corpuscles prove it to be the blood of a fish or reptile; that it cannot be the blood of a mammalian. He has thus settled the all-important question in the case, and thus his scientific knowledge has solved the vital problem which could not have been determined by a layman, and thereby may have saved a life. So time and again we shall have opportunity to bring our special knowledge to bear, and by its exercise shield or ward off the impending calamity, or help justice convict the empiric or quack. I will cite a few cases which will tend to show what value is sometimes placed on parts of the human body by juries: A man was struck on the head by an iron poker in the hands of a brakeman; the external table of his skull was cracked. In consequence of the injury he was threatened with paralysis of the optic nerve. He sued the railway company for the wrong inflicted by their servant, and recovered \$4,000.

\$10,000 was paid for injury to a boy's brain received by the falling upon him of a berth in a Pullman car.

£500 was given for the injury to the spine of a lady, caused by being compelled to jump from a railway carriage.

\$7,500 was given to a young woman who fell, through a defect in the sidewalk, and fractured her vertebra, so that paralysis ensued.

These citations are interesting, as showing what value courts and juries sometimes put upon bones and brains, and to urge upon us to discharge the duties of our profession with faithfulness. It has been decided by the courts that when a man uses dangerous means, and life is imperilled thereby, he cannot escape the consequences of his acts. Then

the burden of proof must rest upon him to show that no other means could have been used, and if he showed a reasonable degree of care and skill in his treatment he cannot be held liable for the results; but to prove this he must have testimony from professional ranks. The plea that it was an accidental or innocent mistake will not avail him, and he will be liable, at the suit of the party injured, for damages at the discretion of the jury. Sound public policy in relation to the preservation of health and life, would seem to require that this rule should have a rigid and inflexible application to cases when the laws of right treatment at the hands of any in our ranks should indicate the want of care and skill.

Instances may be quoted to show how important it is that we should have clear ideas upon this subject, where charges of improper liberties are made against operators, when anæsthetics have been administered. You will know how often men have been unjustly accused of this, when the facts have proved beyond a question that there was not the slightest ground for them to rest upon. In these days of sudden deaths, when one can hardly read a daily paper without seeing one or more sudden deaths reported, has it not often occurred to you that such a case might occur in our operating chair, either with or without any anæsthetic? I remember a case in my own practice, where a man of wonderful physical development came to the office to have a tooth extracted. He did not appear nervous at all. There was nothing in the operation to excite comment—a simple case of extraction—yet the moment that tooth left its socket that man became as rigid as marble—eyes set, stertorous breathing—it was some time before we got him around again. And so we will day by day have to take risks that we know not of, which may not manifest themselves, and yet in some unforeseen moment may overtake us. Dealing as we do with the nervous, the anti-nervous, the strong and the weak, it will readily occur to you why I decided in response to your invitation to read a paper to-night, to take the subject that I did.

I have tried to bring out some of the many points and reasons why we should have this matter written up and dis-

cussed. That the disease we are called upon to treat proceeds from pathological causes, and that lesions in the teeth and oral cavity are far-reaching, and go to sum up the happiness of the human family, and tend to their well being. We have, I think, sufficient ground for the necessity of a dental jurisprudence on which much remains to be written. The design of this paper will have accomplished its mission, if what I have said will attract your attention to the importance of the subject, and lead to its investigation.—*Independent Practitioner.*

HEMORRHAGE, HEMORRHAGIC, DIATHESIS HÆMOSTATICS.

DISCUSSED BY THE ST. LOUIS MEDICAL SOCIETY.

(Continued from page 373.)

DR. HUGHES.—Dr. Love has struck the key note in regard to the existence of the hemorrhage diathesis. If you mean by the hemorrhage diathesis, a constitutional habit of body which may be handed down from generation to generation, as other diathesis are, there may probably be some reasonable doubt as to the existence of this diathesis in the same sense as we regard other constitutional and hereditary transmissible diathetic conditions. That there are peculiarities of constitution in individuals at certain periods of their lives predisposing them to bleed from slight causes, and which render their bleeding difficult of arrest under ordinary appliances which usually influence individuals in general, there can be no doubt. If we observe these causes closely, the children, especially, we will find that they are all poor eaters, bad feeders; and that they are possessed of a lower tone as compared with other children—other children even in the same family. One of my children is possessed of this peculiarity, but it has been gradually disappearing under the influences which have been brought to bear upon the hypothesis that the child did not possess the irremedial constitutional diathetic condition, but that there exists a condition of a lowered tone of the vaso-motor nervous system, a condition approaching, under certain existing causes, more nearly to

the paralytic than is ordinarily found. I do not know whether I am going to make myself understood or not. I am sure I understand myself. In the malarial districts, for instance, you will find a certain class of people who, under the influence of malarial toxicemia, take to bleeding at the nose, and they reveal evidence of a congested condition much more readily than their neighbours about them. A paralyzed state, or a semi-paralyzed state of the vaso-motor system under the influence of this poison, presents itself much more readily in some persons than in others, and when these hemorrhages occur, this same depleted state of the vaso-motor nervous system, by which its contractile influence over the arterioles is diminished, its hold on them is impaired. This same condition renders it difficult to bring about a responsive action by the use of ordinary styptic appliances. The outer peripheral expansion receives the same impression in these cases when you apply your styptic, your tanic acid, your perchloride of iron, or your actual cautery. It is believed there is a semi-paralyzed condition existing at the time, a lack of impressibility by the peripheral impression, which fails to bring about the usual contractile result. Now this is the reason why, if you apply a white heat cautery and destroy the vitality entirely of the nervous organism, you fail to have contractile response. Men have been known to bleed to death despite the use of every appliance, from the extraction of a tooth; and parties have been known to bleed from nasal hemorrhage, in which no sort of styptic appliance would be effective to promote the necessary contractility to arrest the flow of blood. Now the rational view to take in connection with this subject is this: that these children who are known as bleeders, who bleed so easily from slight and trifling causes not sufficient ordinarily to excite more than a momentary flow of blood, in which nature herself performs her own hemostatic,—these children are subjects for treatment, not only for the arrest of the hemorrhage at the time, but, like fits of hysterics, which are generally neglected except during the paroxysmal stage by the general practitioner, they are subjects for treatment after the tragic event has passed by. There is a constitutional condition to be re-

medied ; there is a state of the system demanding the physician's attention ; and it is the duty of the physician to tell the friends of the patient so, and see that the patient's nervous system is properly treated. Of course there is probably a change in the state of the blood ; there is probably anemia, if you may call it such ; there is probably a deficiency in the constituents of the blood ; there is probably a preponderance of the watery elements of the blood ; a deficiency of the solid constituents, a relative deficiency in these constituents. If you take the history of most of the cases, it is natural that it should be so ; it is not improbable that a lowered trophic condition exists. Usually these children are not possessed of solid muscular fibre ; you will usually find that the children are florid ; they are cases for methodical treatment.

DR. ATWOOD.—Whether the full pathological condition on which the so-called bleeder is dependent, is resident in the vaso-motor system of nerves or not ; whether it depends on a singular condition of the blood, the watery elements preponderating, or upon, as was supposed for years, a deficiency or absence of the middle coat of the blood vessels, whereby the blood exuded very readily through their coats, I am convinced from my observation that the disease is hereditary, and furthermore, that the hemorrhagic diathesis itself exists. And I am convinced of the fact because for years I have been a practitioner in two related families, in which the male members, almost every one of each family, died of hemorrhage resulting from injury, and in almost every instance, when the injury was received, purpura hemorrhagica developed ; there was bleeding from the skin ; ecchymosed blood between the cutaneous tissue ; bleeding from the gums ; bleeding from the canthus of the eye ; bleeding from the rectum or anus ; bleeding from the bladder. And I was informed by those in families, who were brother and sister, and through whom a relationship in the family existed, the hemorrhagic diathesis had been prevalent, and I myself treated one or two of the children who died. The last case was that of a little boy three or four years old, who, in running across his mother's room, fell, and his head striking violently upon

the sharp edge of the dressing-case, the tissues of the forehead over the left eye were divided to a small extent. From this he died. He had four or five physicians, and every effort was made to control the hemorrhage, but he bled to death from that slight wound.

DR. BREMER.—I know a family, in which there were two sets of children, so far as the complexion was concerned. The one set was blonde, and took after the mother ; the other was dark, taking after the father. The blondes were bleeders—and the family of the mother were bleeders. I treated one of the blonde children, a boy nine years of age. He had injured his scalp with the sharp tooth of a comb. The bleeding could not be stopped, and soon general hemorrhage set in from the canthi of the eyes, the nose, and from the bowels. This case proves that there is such a thing as bleeding diathesis, and that this diathesis is transmissible in the same way that tubercular diathesis is transmissible. In regard to the question whether it is constitutional or local, I would remark that it is very hard to answer such a question, because it depends on what you understand by constitutional or local. There is one thing certain, that hæmophilia is neither anemia nor hydremia, nor a vaso-motor paralysis : nor is it hyperemia, nor a cachetic state of the blood and of the body in general. There is, above all, a diseased state, or a tendency to disease of the capillary system. We know to-day by experiment that there is no inflammation without there being disease of the walls of the capillaries ; a certain amount of white blood corpuscles in the normal position find their way through the walls of the capillaries.

To be continued)

Dental News.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

Concluded from page 388.

Mr. Henri Weiss said that in all cases where plates had to be made to supply losses occasioned by malignant disease, it was important that the greatest care should be taken to avoid

every possible source of irritation, since anything of this sort would be very liable to bring about a recurrence of the disease. When the parts to be restored had been lost by gun-shot or other accidents, this extreme care was not so necessary, but in the case of patients who had been the subject of malignant disease every possible source of irritation must be thought of and guarded against.

Mr. Turner said it was only since the introduction of rubber for dental purposes that it had been possible to supply such an apparatus as that shown by Mr. Hern easily and cheaply, and it was only comparatively recently that their use had become common. No doubt lost features could now, be reproduced with great success, so far as the improvement of the patient's appearance was concerned. He had had some experience of this kind of work himself, and he had come to the conclusion that the great object to be attained was to restore the air passages as nearly as possible to their natural condition. Before these contrivances were as common as they were now, such cases as that described by Mr. Hern were, as a rule, soon carried off by bronchitis or pneumonia. So long as this important function was properly fulfilled æsthetic considerations were quite secondary.

Mr. Hutchinson said he quite agreed with the opinion expressed by Mr. Henri Weiss. He thought that in the case of patients who had been the subject of malignant disease it was seldom advisable to mould large portions of the face, since this could not be done without making a somewhat large and heavy piece, which must necessarily exert pressure on the surrounding structures, and might thus cause a recurrence of the original disease.

Mr. Storer Bennett showed a couple of agate burnishers which he used when filling teeth by the Herbst method. The advantage of using agate instead of steel burnishers was that whilst the latter became quickly coated with gold, and had to be frequently cleaned, either on a block of tin or with fine emery cloth, the agate did not take up the gold, and a good deal of time was thus saved. The agate burnishers which he had first tried were very easily broken ; those he now showed them were much stronger, and were in all respects well

adapted for the purpose for which they were intended.

Mr. Chas. Tomes said he had tried to get Messrs. Ash to make some burnishers for use in the Herbst process by coating burs with their tooth body, but there seemed to be some difficulty in the way. He had, however, got Mr. Baldwin to make a very serviceable one by taking a tooth in which the pins were far apart, chipping and grinding it away till a boss around one pin was left, then chucking it by the pin in a needle chuck mandril, finishing it off quite true and then polishing it. It gave little trouble to make, and answered its purpose well, since it could be used for three-quarters of an hour without becoming gilded. He hoped Messrs. Ash would soon have some made of this material.

Mr. Charlesworth then described some interesting specimens of fossil teeth from the Museum of the Society, illustrating his descriptions by means of diagrams; but the Publishing Committee not having received any abstract of his paper up to the time of going to press, have deemed it inexpedient to further delay the issue of the current number of the Transactions.

ODONTO-CHIRURGICAL SOCIETY.

The annual Meeting of the Odonto-Chirurgical Society was held in the Rooms, 30 Chambers Street, Edinburgh, on Friday, 13th March, 1885. Mr. Andrew Wilson, L.D.S. Ed., President, in the chair.

PRIVATE BUSINESS.

The minutes of the previous meeting were read and approved, when the President called upon the Treasurer for his report.

The accounts showed an amount of £34 4s. 6d., income from subscription of members, which, with a deposit receipt the interest thereupon, and the balance in hand from the previous year, made a total of £142 2. 4d. The expenses incurred for rent of rooms, printing, stationery, and incidental matters amounted to £38 9s. 10d., leaving a balance of £103 12s. 6d. in the hands of the Treasurer, including a deposit receipt for £95.

The Curator and Librarian then handed in his report, in which it was stated that the museum and library had received several very important donations during the past year of models, pathological specimens and books. He would especially mention the name of Sir E. Saunders as having presented a valuable collection of old treatises, and works relating to dental science, but as each gift had been duly recorded in the Society's transactions at the time of its presentation, he would not take up the time of the members by reading them now.

ELECTION OF OFFICE-BEARERS.

On the motion of Mr. Campbell, seconded by Dr. Smith, the following gentlemen were elected as Office-Bearers for the ensuing year :—President, Mr. W. Bowman Macleod, L.D.S. Ed. ; Vice-Presidents, Dr. W. H. Williamson (Aberdeen), and Mr. John A. Biggs (Glasgow) ; Treasurer, Mr. Malcolm Macgregor, L.D.S., Ed. ; Secretary, Mr. John S. Amore, L.D.S., Eng. ; Curator and Librarian, Mr. George, W. Watson, L.D.S., Ed. ; Councillors, Mr. Andrew Wilton, L.D.S., Ed., Mr. J. Moore Lipscomb, L.D.S., Eng., Mr. James Mackintosh, and Mr. E. A. Cormack, L.R.C.P. and S.E., and L.D.S., Ed.

PUBLIC BUSINESS.

The President having vacated the chair, read a paper upon "The Missing Incisors in Man"—Which are they? [See page 389.

The President, on resuming the chair, called upon Mr. Macleod to read the paper he had received from Mr. Oakley Coles, upon "Congenital Alveolar Fissure," (see p. 341) which was rendered additionally interesting by the exhibition of a large number of models that Mr. Coles had forwarded in order the better to illustrate the cases referred to in his paper.

In introducing Mr. Oakley Coles' paper, Mr. Macleod said that at the beginning of the session he had intended to bring this subject before the Society at the February meeting, and had collected matter for this purpose, when he was waited upon by Professor Turner, who was engaged in the same investigation, and was preparing a paper for the Royal Society

of Edinburgh. He made over the cases in his possession to Professor Turner, and supplemented these with several which through the courtesy of Messrs. Hutchinson and Willoughb Weiss, he had obtained from the collection of the Odontological Museum in Leicester Square, London. The cases enumerated in Mr. Coles' paper could not be got ready in time for Professor Turner's paper, and might therefore be looked upon as supplementary to that very valuable contribution to oral anatomy, which was published in the *Journal of Anatomy and Physiology*, vol. xix.

Mr. Macleod then read a few extracts from Professor Turner's paper, which it is unnecessary to quote, as before going to press we see that Professor Turner's paper is being reprinted in the *Journal of the British Dental Association*, the first portion appearing in the number for March 15th.

The meeting then adjourned to the next room, where Mr. Watson exhibited the models illustrative of these two papers by means of an oxy-hydrogen lime-light lantern, kindly lent by Dr. Walker (London), by means of which a representation could be thrown direct from the model upon the screen. The exhibiton was a successful one, and the Secretary was desired by the Society to communicate their best thanks to Dr. Walker for his kindness in lending his lantern.

CHICAGO COLLEGE OF DENTAL SURGERY.

Dr. TRUMAN W. BROPHY, Secretary.

The third annual commencement exercise of the Chicago College of Dental Surgery took place at Hershey Music Hall, Chicago, Ill., on Friday evening, March 27th, 1885, at 7.30 o'clock.

The address to the graduates was delivered by Professor W. T. Belfield, M.D.; the valedictory by J. E. Hinkins, D.D.S.

The number of matriculates for the course of 1884-5 was sixty-two.

The degree of D.D.S. was conferred on the following members of the senior class by Dr. J. A. Swasey, President of the Board of Directors:—

H. Austin Armitage, M.D., England; Harry Leon Bar

num, M.D., Wisconsin; Edward Everett Cady, Illinois; Warren Cary, M.D., Illinois; Jesse Austin Dunn, Illinois; Astor Gerard Gray, Illinois; Rudolph Theodore Hasselviis, Denmark; Joseph Hickey, Dakota Territory; John Edward Hinkins, Illinois; A. Melville Hudson, Canada; Charles Nelson Johnson, L.D.S., Ontario; William J. Johnson, M.D., Illinois; Edmund Lambert, Illinois; Asa Holt Lane, Illinois; Charles William Lewis, Illinois; Archibald Stuart McCandless, Illinois; Joseph Donahey Moody, Illinois; Amos Jedd Nichols, Illinois; Charles Putman Pruyn, Illinois; Joseph J. Reed, Illinois; Charles Henry Wachter, Maryland; George W. Whitefield, Illinois.

The honorary *dégré* of D.D.S. was conferred upon Dr. E. B. Call of Peoria, Illinois.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN

The next Meeting of the above Society will take place at the rooms, 40, Leicester Square, on Monday, May 4th, at 8 p.m. Casual communications by Messrs. E. Lloyd Williams, S. T. Hutchinson, W. A. Hunt, David Hepburn, and C. W. Dunn, of Florence, per Storer Bennet, Hon Sec. Foreign Correspondence.

Paper, "Bridgework," by Dr. W. St. George Elliott, with remarks on Electro Motors.

DANIEL HEPBURN } *Hon. Secs.*
R. H. WOODHOUSE }

MEDICAL SICKNESS, ANNUITY, AND LIFE-ASSURANCE SOCIETY.

The Quarterly Committee Meeting of this prospering and useful institution was held on the 8th instant, at 38, Wimpole Street, when the following were present: Mr. E. Noble Smith (in the Chair), Mr. J. Brindley James, Mr. Major Greenwood, jun., Dr. F. De Havilland Hall, Mr. E. Bartlett, Mr. S. W. Sibley, Mr. F. Wallace, Mr. R. H. Coombs, Dr. G. Fletcher, Dr. J. Pickett, and Dr. F. S. Palmer, Mr. Ernest Hart, and Dr. W. M. Ord were not present, owing to temporary absence from England; and apologies for non-

attendance were received from Dr. J. W. Hunt and Mr. De Vere Hunt.

The principal business was the consideration of a very satisfactory report for the quarter ending March 31st, from which it appeared that during the period, 39 new proposals had been received, five of which had been declined, and the remainder accepted. The total number of proposals to date was 654. The total income for the quarter had been £1,654 19s. 2d., made up as follows: premiums, £1,591 5s. 4d.; interest, £42 9s. 4d.; entry fees, £21 4s. 6d. Against this, there had been a total expenditure of £348 15s. 6d., leaving a net gain on the quarter of £1,306 3s. 8d. The total assets of the Society at the close of the quarter amounted to £5,314 18s. 0d.

The gross income to the Sickness Fund alone during the quarter had amounted to £900 14s. 3d., from which there had been an expenditure of £261 11s. 0d. for sickness-pay, representing payments to twenty-four claimants on account of sixty-nine weeks three days' sickness for ailments of a varied nature, and in periods ranging from a minimum of one week to a maximum of eight weeks. The report stated that "the extent and nature of the claims afford full evidence of the usefulness of the Society; and, though showing a large increase over the previous quarter, the sickness-rate is markedly below that provided for in the tables." The quarter's income for management expenses had been £180 7s. 0d., against an expenditure of £85 6s. 10d.; and the cost of the work was stated to be now about 5 per cent. on the premium income, instead of the $7\frac{1}{2}$ per cent. allowed for in the tables. The result of this was that there was a balance of £504 4s. 2d. in this Fund, which might be looked upon as a profit accumulation standing to the credit of the members.

After discussion of the report, which was considered highly encouraging and adopted, it was determined that the next quarterly meeting should be held on July 15th, for the purpose of considering the annual report to be issued to the members previously to the General Meeting, to be held at Cardiff during the last week in July. Documents and full

particulars of the Society will be furnished on application to the Secretary, Mr. C. J. Radley, 26, Wynne Road, Brixton, S.W.

APPOINTMENT.

Chas. W. Glassington, M.R.C.S., and L.D.S.Ed., has been appointed Lecturer on Dental Materia Medica to the National Dental College, Great Portland Street.

VACANCY.

The Dental Hospital of London, Leicester Square. The post of Dental Surgeon is vacant. Application with testimonials by May 11th.

Correspondence.

[We do not hold ourselves responsible for the opinions expressed by our correspondents.]

To the Editor of "The British Journal of Dental Science."

SIR,—I should be sorry to attach too much importance to what may be deemed by many a small matter: but it has seemed to me worth while to draw attention to the *Poisons Bill* now before Parliament—will this Bill affect Dentists? There are, no doubt, many practitioners who are in the habit of giving or selling preparations that contain poisons—for the treatment of sensitive teeth, &c.—to their patients. Would it not be well for the proper parties who are watching over the interests of the Dental profession (Is it the British Dental Association?), to see whether it is desirable to communicate with the framers of this Bill to insert clauses to protect Dentists?

Your obedient servant,

"NEMO."

April, 1885.

OBITUARY.

THE LATE THOMAS HOWKINS, M.R.C.S., ENG.

Thomas Howkins, born 1831, died at Torquay of heart disease, March 29th, 1885, aged 54.

After a very successful career at various schools, he went to Mr. Williamson's, L.R.C.S., Eng., of Leicester, surgeon

dentist to the Leicester General Dispensary, where he studied the various branches of the dental profession. He joined the University College, London, in 1857, where he gained certificates of excellence in nearly every subject. He also gained the gold medal in surgery under Professor Erichsen, and also silver medals in anatomy and physiology. He obtained the membership of the Royal College of Surgeons, England, in 1857, and the same year commenced practice as a dental surgeon in Birmingham, where he continued to practice until very recently. He held the professorship of dental surgery and physiology at the old Sydenham College and afterwards at the Queen's College, Birmingham. He was also a member of the Council of Queen's College for many years. He was surgeon dentist and afterwards consulting surgeon dentist to the Birmingham and Midland Free Hospital for children. He was a member of the London Odontological Society some years, also a member of the Midland Medical Society and on the formation of the Midland Odontological Society in 1883, he was elected President and delivered his presidential address to the members April 3rd, 1884. He also contributed several papers on subjects of interest to the profession, among which was "On the Vitality of the Teeth, and its Relation to Caries," which appeared in the *British Medical Journal* 1859. He held one of the highest positions in the Masonic Brotherhood, and took a most active and intelligent interest in the promotion and working of the Masonic Charities.

JOURNALS RECEIVED.

Independent Practitioner; Dental Cosmos; British Medical Journal; Southern Dental Journal; Ohio State Journal of Dental Science; Items of Interest; Chemist and Druggist; L'Art Dentaire; Revue Odontologique; Revue Odontologique des Bruxelles; Le Progres Dentaire; Medical Bulletin; Dental Record; L'Odontologie; Pharmaceutical Journal; Transactions; Transactions of the American Dental Association; Deutsche Monatschrift fur Zahnherlkunde des Vereins; Monatschrift Deutsche Vereins Zahnkünstter; Revue Odontologique de Belgique; Anales de la Sociedad Odontologica de la Habana; Facts—a quarterly Dental Journal; Chittanooga Tenn; Subovrachebny Vestnick St. Petersburgh; Archivee of Dentistry; Dental Register; Dental Headlight; Amended Constitution of the American Dental Association, (Saratoga); The Treatment of Skin Diseases by Novel means and methods, Dr. John V. Shoemaker, Philadelphia; The New Zealand Gazette.

British Journal of Dental Science.

No. 417.

LONDON, MAY 15, 1885.

VOL. XXIX.

COMPARATIVE DENTAL PATHOLOGY.

INJURIES AND DISEASES OF THE JAWS IN ANIMALS.*

By J. BLAND SUTTON, F.R.C.S., Eng., Lecturer on Comparative Anatomy, Middlesex Hospital Medical School.

Having attempted on two previous occasions to make some additions to our scanty knowledge concerning diseases of the teeth in animals, I thought it would be advisable in the present paper to supplement my previous communications by such evidence as could be collected on the subject of "injury and disease" of the jaws. Scattered amongst the transactions of societies and periodical literature are many cases of great value and interest in their bearing on this question. Besides these sources, the museums contain specimens interesting and full of instruction for they go to show that animals in their natural "wild state" do suffer from disease, often very severe and extensive, affecting animals from the size of a field mouse to that of the largest mammal that moves—the mighty whale. Evidence will also be adduced respecting the antiquity of disease, which will undeniably prove that civilization is not the only cause of disease in the human being, but that it is one of his "birthrights."

In addition to facts gleaned from every available source, I shall add those which have come under my own observation.

For convenience of description, the subject will be arranged in the following order :—

1. Malformations.
2. Injury and its results.
3. Atrophy.
4. Hypertrophy.
5. Morbid growths, including under this heading—(a) Cystic tumours, (b) Osseous tumours (Exostoses), (c) Sar-

* A paper read before the Odontological Society of Great Britain.

comata, and (*d*), lastly, the disease known as Actinomycosis, which, strictly speaking, ought to be regarded as a general disease, but as the jaw is often a seat of its manifestation it has been included in this list.

MALFORMATIONS.

Deformities of the jaws are of serious import in regard to the life of the young animal ; for not only must the upper and lower jaws be perfectly formed, but they need be symmetrical, for any disproportion between the relative size of the upper and lower maxillæ necessarily entails, in mammals, difficulty in the all-important act of grasping the nipple of the mother.

The malformations of the parts in question vary from a slight cleft in the hard palate to total deficiency of one or all the maxillæ. The subject may be arranged for description as follows :—

- | | | |
|---------------------|---|-------------------------|
| 1. Superior Maxilla | { | Absence. |
| | | Variation in size. |
| | | Cleft Palate. |
| 2. Inferior Maxilla | { | Absence. |
| | | Variation in size. |
| | | Abnormalities in shape. |
| 3. Teratomata. | | |

1. SUPERIOR MAXILLA.

(*a*) ABSENCE.—This is a rare defect, and probably rarely occurs alone, but is always associated with arrest of growth of the entire facial skeleton. The occurrence of this deformity is attested by some specimens in the Museum of the Royal College of Surgeons,—an eel, a carp, and the head of a foetal chick. It has also been seen in geese and ducks. The absence of the maxillæ in carp is remarkable, for Saint-Hilaire mentions that malformation of the face in these fish is so extremely common, that the German distinguish carp deformed in this way as *Mopskarpfen*, literally, pug-nosed carp. Many observers have noticed this peculiar deformation in carp, including Gesner, Mayer, Réaumur, Hamberger, Otto, Valenciennes, and Rayer.

Gurlt has figured a case which occurred in a lamb. The lower jaws, though mis-shapen, have attained ordinary di-

mensions ; but the superior maxillæ are not represented, and there is arrested growth of the remainder of the face and skull.

The head of a duckling which came under my notice presented complete absence of the upper mandibles, whilst the lower pair are to all appearances perfectly normal. In this specimen the vault of the cranium is wanting and the brain protrudes. There was in addition considerable abnormality of the abdominal viscera. Guy's Hospital Museum contains the skeleton of a foetal pig with absence of the superior maxilla ; the malar bones of opposite sides meet in the middle line.

(b) VARIATIONS IN SIZE.—1. Geoffroy Saint-Hilaire points out that the upper jaw is less frequently affected than the lower, so far as normal volume is concerned. This observer states that he had never seen a case in which the upper jaw had exceeded normal dimensions, and it is also very rare that it does not attain to them.

He relates a case, however, in illustration of arrested growth which occurred in a lamb ; the superior maxilla was not only too short, but deviated laterally.

I have seen in a foetal goat, which survived its birth only a few days, the premaxilla so short that the lower jaw projected an inch beyond the upper one. The condition was associated with enlargement of the thyroid gland. In all the recorded cases of this condition I have been able to come across, the deficiency seems to have affected the premaxilla rather than an actual shortening of the maxilla itself.

In an interesting case reported by Paul Gervais in a foal, born in the Argentine Confederation, which had a hydrocephalic cranium, there was total deficiency of the premaxillæ. But among the most curious and remarkable instances of perpetuation of a vice of conformation of this character must be noticed the deformity exhibited by those fancy dogs (King Charles's breed) in which the lower jaw projects a considerable distance beyond the upper. In these dogs the deformity is due to stunted growth of the premaxillæ.

Saint-Hilaire met with a singular deformity of the superior maxillæ, consequent on absence of the lower jaws, in a calf. The upper jaws were so twisted that, instead of the teeth

on either side being arranged vertically and parallel to one another, they were directed horizontally inwards and towards one another, so that the crowns of the molar teeth of opposite sides met across the middle of the hard palate.

PARROT MOUTH.—Horses are liable to have the premaxilla somewhat more projecting than normal, so as to cause the upper incisors to project unduly and overhang the lower set. In some cases this may amount to $1\frac{1}{2}$ inches. On account of the resemblance the deformity has to a parrot's upper bill, the name parrot mouth has been given to it. In severe cases the deformity causes the animal considerable inconvenience when grazing. The lower incisors, from lack of antagonism, may grow unduly and sometime occasion injury to the roof of the mouth. Under these conditions it is necessary to rasp them down.

CLEFT PALATE.—The occurrence of fissures in the palate is in man very frequent; the evils which result therefrom are so marked, and the life of the infant so often endangered thereby, that the subject has naturally attracted a very considerable amount of attention, not only from practical surgeons, but also from anatomists and embryologists. It is satisfactory to know that this deformity is not confined to man, but in all its forms has been found in the lower animals. It is by far the most common malformation to which the jaws are liable, and may vary from a slight cleft affecting only part of the palate to a complete fissure extending throughout its whole length, and at the anterior end may bifurcate so as to completely isolate the premaxillary bones, and leave them jutting forward on the end of the median septum.

The occurrence of cleft palate has been found in horses, calves, dogs, and lions living in captivity. Examples occurring in birds have been recorded where the upper mandible has been found cleft in twain.

THE INFERIOR MAXILLÆ.

(a) **ABSENCE.**—Total deficiency of both lower jaws is recognised by teratologists as *Agnathia*. Some good examples of this malformation exist in the Museum of the Royal College of Surgeons, London, in a pig and in lambs. This deformity leads to other changes in the skull, such as approximation

of the eyes and ears; the latter nearly meet one another under the base of the skull, a condition known as *Synotia*. In addition there is contraction of the posterior part of the cranium.

Förster figures two cases, and Ahlfeld gives a drawing illustrating the condition, and affords references to many others. Gurlt, in his exhaustive work previously mentioned gives some admirable figures of this remarkable condition, occurring in lambs, pigs, and calves. *Semi-agnathia*, or deficiency of one-half of the lower jaw, is very rare. Mr. F. Eve has described a case which occurred in a lamb. In this case several of the facial bones were absent or defective, including the upper maxilla and the associated bones. The defect was on the right side. Mr. Eve, insisting on the rarity of the condition, states that no mention of the deformation occurs in the standard works on teratology of Geoffrey Saint-Hilaire, Gurlt, Förster, or Ahlfeld.

(b) VARIATION IN SIZE.—Excessive development of the lower jaw is rare, and in suspected cases it is necessary to discriminate between excess of development of the inferior maxillæ or arrest of growth in the superior maxillæ. Saint-Hilaire has described and figured a singular case in a canary, where the upper mandible was of normal dimensions, but the lower was twice as long as usual.

Defective development is the condition more frequently met with. Saint-Hilaire mentions two cases which occurred in deer born at different times from the same mother. In these examples the lower jaws were one-fourth shorter than usual. The same observer alludes to a case occurring in a dog.

(a) ABNORMALITIES IN SHAPE.—The Museum of the College of Surgeons possesses an interesting example of malformed lower jaws in a calf, which should be mentioned here. The skull is somewhat shorter and broader than normal, and the rami of the mandibles are so curved as almost to form a semicircle. This deformity is not rare.

In some animals, particularly the horse, the lower jaw is liable to a curious malformation, which has a singular effect upon the teeth.

The deformity consists in the rami of the lower jaws being

unusually near together, this producing as a consequence unnatural approximation of the two rows of lower molars, the upper rows of teeth maintaining their normal positions. When this occurs, instead of the crowns of the upper and lower molars meeting each other over the whole extent of their surfaces, the inner surface of the upper teeth and the outer half of the crowns of the lower teeth alone come into contact during mastication. The result of this partial wear causes the outer edge of the upper teeth to elongate in such a manner as to hinder, or prevent, the lateral grinding movements, and if the unworn portions attain any great length their projecting portion may effect serious injury on the maxillæ as it leads to inflammation of the gums and the underlying alveolar processes.

Varnell has well described the condition in the pages of the "Veterinarian," and the Museum of the Royal Veterinary College contains some very striking illustrations of it from the horse. In the most marked example contained in that collection, the molar teeth in the upper and lower jaws have sharp trenchant crowns, not broad and flat as is usually the case; the teeth are from two to three inches in length, and those in the lower jaw play inside the upper set, so that in their action the two sets glide over each other like the blades of shears. In consequence of this, when the jaws are closed the upper set of teeth are alone visible, and completely hide the lower molars.

Such a marked degree of this abnormality as the one quoted above is of course very rare; minor degrees of the deformity occur with tolerable frequency, requiring the redundant portion to be cut off or levelled with a rasp.

I have seen examples in a slight degree of this affection in deer, in which unequal play of the teeth upon one another had led to the formation of an abscess in the maxilla.

(To be continued.)

ARTIFICIAL DENTISTRY.*

By J. ALLEN.

With comparatively few exceptions, the department of artificial dentistry requires more special attention than has been bestowed upon it for some years past. Consequently, we deem it proper to suggest more thoroughness in this branch of our profession. Many important points should be kept in view by the dentist when he is required to construct artificial substitutes to replace the loss of the natural teeth.

When consulted upon this subject by our patrons, we should carefully study the requirements of each particular patient: for there are no two cases alike, and a set of teeth that would be well adapted to the mouth of one person in point of utility, form, and expression, would produce great imperfection, and even distortion, in the mouth of another; hence the great importance of the most careful discrimination between the various requirements of different persons in this branch of dental practice. The different functions of the natural teeth with reference to mastication, enunciation, articulation, and restoration of the natural form and expression of the mouth and face should all be fully considered.

From the taking of the impression, through all the different stages of the work to the final completion of a denture, various causes may occur which might prevent a successful result. Therefore, in order to avoid a failure from any of these causes, let us look for a moment at the acquirements necessary for one to possess who is to replace those organs which nature, with all her perfection, had previously formed; for, whatever be the mode employed, he will have to learn that it is the height of art to conceal art.

This, together with practical utility, should be the great point to attain in the construction of artificial dentures. To reach these points requires the skill and perception of an artist, the manipulation and experience of an expert, together with thorough mental training and scientific research. Hence the impropriety (as we think) of calling this branch of our profession *mechanical* dentistry; for, according to our best lexicographers, a mechanic is one who constructs the products

*A paper read before the American Dental Association

of some mechanical trade, requiring the rule and scribe to work by, in order to produce perfect uniformity in his results. But the skilful dentist carefully avoids this mechanical sameness, for he has no two cases which require the same form ; consequently, this branch of his professional duties pertains more especially to that of the artist, whose powers of perception and discrimination enable him to see just what is necessary to meet the various exigences involved in his operations. He has no fixed forms or rules by which to be governed, as the mechanic has ; but he encounters some new phase in each succeeding case, as, for instance, in the length, size, form, position, and adaptation of the teeth, together with the lighter or darker shades and tones of the teeth and gums, all of which should be of a character suited to the age, complexion, and expression of the person for whom they are intended, thus producing one harmonious blending of all the features of the face of his patient.

To do all this, the operator must possess a knowledge of several branches of art and science.

Among these, he will find the elements of chemistry essential, with reference to the hygienic properties of the materials he employs and the means of preparing them for dental purposes.

He must also know the nature and properties of the various metals and minerals used in dental practice, together with the art of converting them into artificial dentures, especially if he does continuous-gum or block work. Our dental colleges and the community require of him a knowledge of anatomy, physiology, chemistry, and therapeutics, together with the principles and practice of dental surgery. He must also possess mechanical skill, which involves an insight into several trades, such as working the precious metals, modelling, moulding, casting, etc., etc. In short, he must be a sort of compound man, embodying the knowledge of several branches of business, in order to perfect himself in artificial dentistry. With these acquirements, we claim for him a position in the front rank of his profession.

But it is evident that very many of those who construct artificial dentures do not possess all these qualifications : that

they are not artists ; that their artificial work has not that graceful and life-like appearance which characterizes the natural organs ; that there is a want of proper tone, expression, adaptation, and practical utility ; and that their dentures exhibit only a stiff, mechanical appearance, that enables every beholder to spot them at once as artificial teeth. Such men must occupy the subordinate position of mere mechanical dentists, whose claims to supremacy are very small, and whose merits are still less.

In order to remedy this evil, let those who are below the proper standard ascend to the higher ranks, bringing with them science, art, and skill, gathering all along their pathway here a little and there a little, in order to fill up the great storehouse of knowledge from which success must flow.

In reference to the various modes now in use, they all seem to have their place, and may be adopted under the different circumstances attending particular cases. When consulted the operator should examine carefully, and then decide as to what method will secure to the patient the greatest degree of practical utility and personal gratification, and then advise accordingly, bearing in mind that whatever be the mode, skill, taste, and judgment must preside over the operation for there is no system so perfect as to render these unnecessary, and the further the method is from yielding results true to nature, the harder will it be for the dentist to construct his work so as to elude detection in the mouth.

In this respect we have been able to approach much nearer the acme of our ambition by means of the continuous-gum system than with any other with which we are familiar ; but as this style of work speaks for itself, nothing that we could say by way of eulogium would add to its merits.

We would therefore suggest that as this branch of our profession seems to require a higher standard of qualifications than has heretofore been possessed by some dentists, who seem to study how to do the cheapest rather than the best work, we deem it proper to urge upon them the importance of bringing intoquisition a much higher order of talent in the artificial branch of dentistry than our present records indicate ; for this low ambition always has a downward tenden-

cy, and will place its votaries where they surely belong,—upon the lowest platform of their profession.

Now, while we can look with pride upon the advances that have been made within the last few years the other branches of dental practice, let our efforts be also directed to the advancement of the artificial department, that it may equally merit popular commendation.

SUPPLEMENTAL REPORT ON TREATMENT OF PYORRHOEA ALVEOLARIS, WITH NOTE ON EUGENOL AND SANITAS OIL.

By A. W. HARLAN, Chairman.

(*Concluded from page 399*)

DISCUSSIONS.

DR. ODELL: I wish to express my high appreciation of the paper which Dr. Harlan has just read. There is only one point where I would take any exception to it. The doctor seems rather to disapprove of manipulation of the gums in the cases he has mentioned, and is in favour of letting the drugs do the whole business. I have had two cases myself, and quite important cases, too, and have participated in attendance upon which Drs. Rhein and Bödecker had in charge, where the manipulation of the gum at a certain stage seemed to be about the only thing that kept up the reparative action. At least, until that was done there was very little progress toward recovery. We had in one case a molar that semi-occasionally resisted treatment, or seemed to get just about well, and then suddenly everything would break loose, and you could readily pass the probe quite to the apex of the root. Finally, we decided upon having the patient assist in the treatment by frequent manipulation of the gum. That was supplemented by the application of the galvanic current once in four days, and then the parts got well. All the drugs that we applied, however severe or however mild, did not seem to have the desired effect upon that particular locality. The conclusion that we came to was that it was a sort of neurosis, and that electrical treatment would be the thing to help us out of the

difficulty. Some experiments are now in progress by Dr. Bödecker looking to the establishment of that position. I will not attempt to give a synopsis of the theory, but will simply say that it seems to me so reasonable that I am satisfied to wait until Dr. Bödecker and the gentleman engaged with him finish their experiments and present it in their own manner.

DR. BOGUE : I would like to ask Dr. Harlan, if it is in order, why, at a certain stage of his treatment, he recommends the use of Canada balsam? and also, why, at a certain stage, he recommends powdered myrrh? The questions seem to me important.

DR. HARLAN : In answer to Dr. Bogue's question, I would state that I said in the paper that the prescription was made for the purpose of washing the mouth and gums after removing the salivary deposits, and was discontinued when the systematic treatment of pyorrhœa proper was begun; so it was not used in the treatment of pyorrhœa at all. That much with reference to Canada balsam. With reference to the myrrh in the paste, the quantity is so small that I presume it might be left out. Perhaps there was no particular benefit to be derived from it, but it disguised the taste of some other things—borax, for instance—that would be disagreeable to some people. The chief object was to make it a paste instead of a powder, as I have found that in that form it was less liable to lodge around the necks of the teeth, and that the patient would wash his mouth and teeth more thoroughly.

DR. BOGUE : It has seemed to me that if, in these cases, it is necessary so carefully to remove all deposits from the roots of the teeth before commencing either constitution or active local treatment, it is entirely unphilosophical to use, among other agents, those that must in the very nature of the case produce deposits. The substances mentioned are precipitated by water, and the effect of them must be to render the teeth sticky by just so much as they are used, if my understanding of the matter is correct. Perhaps I am in error in supposing that there is a discrepancy between the doctor's statement and his practice, and if so I would be very happy to be corrected. I have noticed for many years that gentlemen of

our profession have a tendency to prescribe tincture of myrrh and such things, which I could never understand the use of.

I wish to express my profound thanks to Dr. Harlan for his admirable paper, for his researches in this matter have certainly been of benefit to me, and I believe also to others.

DR. HARLAN: I would like to ask Dr. Bogue if he ever used a tooth-paste in which there was a small proportion of myrrh.

DR. BOGUE: Not consciously; I use glycerine instead.

DR. HARLAN: I have used this paste myself, and have not been conscious of any deposit of myrrh on my gums; at least, none which would remain. I think with a paste the patient is much more likely to brush and re-brush his teeth than with a powder. Patients tell me so, and I believe it to be true. I have seen several hundred cases of this kind, and if myrrh is not a good thing to put in this paste, I certainly wish to take it out. I have not studied the action of myrrh very closely, and don't know much about it. I supposed, however, that it acted in the nature of an astringent.

The PRESIDENT: I am sure this is a very interesting question, and I hope it will be thoroughly discussed.

DR. BARRETT: With the exception of dental caries, I suppose there are none of the oral diseases which the dentist is or should be called upon more frequently to treat than this disease of pyorrhœa alveolaris. I have listened with interest to what Dr. Harlan has said on this subject, and I have read with interest what he has written. I am expectantly awaiting the presentation of his promised paper upon the etiology of this disease. Until we understand the causes which produce it, we shall not be prepared to enter upon an intelligent course of treatment. What are the pathology and therapeutics of this disease? Is it an affection of the periodontal membrane? Is it a disease of the soft tissues, or is it seat in the osseous structures? Is it local or constitutional? Is it curable or incurable? Does it demand surgical or merely medicinal treatment? If it be confined to the periodontal membrane, one course of treatment will be indicated. If it be something entirely dependent upon the superficial deposits upon the tooth, then a different treatment may be

called for. The cases which have afforded me the greatest anxiety have been those in which there was certainly an affection of the alveolar process, if indeed such is not the fact in all cases. I have found in these instances that a simple removal of superficial deposits, and the application of astringents, cauterants, or any other class of remedies, was not sufficient. It did not reach the foundation of the disease. I have had some cases that have seemed to be extremely obstinate. In one of these I performed frequent operations, until I feared I must remove all the alveolar wall before I succeeded in arresting the course of the disease. My own treatment has been, in all obstinate cases, the removal of the edge of the alveolar process, because I believe the disease in such cases to consist mainly of caries of the border of the process. It might be termed alveolar necrosis, but for the fact that there is no regular sequestrum formed, although there is a wasting of the alveolar walls. Is that owing to periodontal inflammation, or is it due to a disease in the the bone—in the alveolar walls themselves? My own experience teaches me that in all serious cases the alveolar walls are materially affected, and that until you have removed the carious portion and established a line of demarkation between the healthy and the diseased bone, no progress can be made in the treatment. When that has been done, and the superficial deposits have been removed, I have had no trouble, and all after treatment has been simply incidental and palliative. Of course, I do not mean that I can cure every case that comes into my hands, but in the cases where I have been most successful I have noticed what I have stated.

To set up this line of demarkation, the agent that has proved most efficacious in my own hands has been chloride of zinc. I have used the iodide of zinc with happy effects, but the chloride is more satisfactory. We all know that there is scarcely anything in the range of our *materia medica* which so stimulates the production of new tissue. My main dependence, therefore, after the use of aromatic sulphuric acid, or something of that kind, has been chloride of zinc, simply as a stimulant to the formation of new bone.

Reflections from the Surgery.

COCAINE, THE NEW ANÆSTHETIC.

By J. W. CARMICHAEL, L.D.S.I.

As it is the best way to get at the true value of any new remedial agent, and to come to a definite conclusion as to how it shall be applied, by getting together the collective tests of different practitioners, I here give the result of a trial with the hydrochlorate of cocaine, a solution one in ten of rectified spirit being employed.

The Rev. Mr. B——on the 20th April, 1885, came to consult me about the second left superior bicuspid (its neighbour the first had been extracted,) which was affected with caries in the mesial wall. It had not yet formed a cavity, but the softened enamel of the part was painfully sensitive to the touch of a probe. I therefore fixed on the rubber dam, dried the tooth and touched it with a small roll of cotton wool about the size of a clove head, previously dipped in the cocaine as above. This I repeated three times, allowing two minutes to pass between each application. That had little or no effect. I next propped another piece of wool soaked in the medicine, up against the ill-disposed enamel for ten minutes, at the end of which the acute sensibility was so far reduced that I was permitted to remove the enamel also part of the dentine, until I wounded the pulp, when I suddenly heard “Ho, that was most, most dreadful!” I now applied the cocaine to the pulp, for ten minutes as before, and pricked it, when he called out, but said “It was nothing like so bad as it was before the cocaine was used.”

This shows, then, that I was by its aid, so far successful that I was enabled to excavate a tooth, which without some such agent could not have been done.

COCAINE IN DENTAL SURGERY.*

CASES UNDER THE CARE OF J. McKNO ACKLAND, M.R.C.S.,
L.D.S. Eng., Exeter.

Having read with interest the reports which have appeared week after week of the various uses to which cocaine has

* Reported in the *British Medical Journal*.

been put, I thought a few particulars of my experiments with it in dental surgery might be interesting.

For extraction, I have tried both the solution and the hydrochlorate of cocaine itself, and, with the latter, have obtained very satisfactory results. It seems to answer best for front teeth and bicuspid, also for stumps when separate. The following case will show the method adopted, etc.

R. W., a porter, aged 20, came to the Dental Hospital to be relieved of a lower right second bicuspid, which was above the average size and quite firm. I first surrounded the teeth, and about half an inch of the gum around it with the corner of a napkin, to keep the parts dry, and prevent the cocaine from being carried off in the saliva. I then freely applied the crystals to the gum close around the tooth three times, at intervals of two minutes each. After the second application, the gum was entirely anæsthetised, the patient not feeling the pricks of a sharp probe. A few seconds after the third application, with a pair of warm forceps, which I carefully hid from view, I extracted the tooth, and said nothing for some time. At last I desired the patient to wash out his mouth, but he began to smile, saying the tooth was not out; nor would he believe that it was until he had felt the empty socket with his finger.

With large teeth I have found it a good plan to treat as above, and then, just before extracting, to introduce the nozzle of a fine hypodermic syringe between the gum and neck of the tooth, and inject three or four minims of the 4 per cent. solution. This may not, however, be possible in all cases.

With molar teeth, more especially upper, although the pain is greatly diminished, there is always the twinge of the actual separation of the tooth from its socket, and the rupture of the nerves, etc., at the apices of its roots.

In all the cases I have seen, the gum has returned to its normal estate in a short time, and there has been no unfavourable symptom of any kind, although I have carefully watched for them both locally and otherwise. As an obtundent for sensitive dentine, the 20 per cent. solution has proved, so far, very effectual. By applying it on a pellet of

cotton wool for a short time, I have been enabled to proceed with the preparation of a cavity for filling, which before has caused the patient the most acute pain; and a solution of this strength will, I think, be found of great advantage in cavities in close proximity to the nerve, or even in operations on the nerve itself.

THE DENTISTS' REGISTER.—At the Wandsworth Police-court last week, Mr. A. G. Yates, of Wandsworth Road, appeared to answer a summons at the instance of Mr. Robert Hugh Hodgson, charging him with using the title of a "surgeon dentist," contrary to the provisions of 41 & 42 Vict.; c. 33, not being registered. Mr. Mortou Smith appeared to support the summons, and said he believed the defendant had never been registered. His card bore the letters, "R.D.S.," meaning a registered dental surgeon. Counsel produced a copy of the *Register* for the present year, in which the defendant's name did not appear. Mr. H. A. Jones, who defended, said his client was registered, and produced a certificate to that effect dated 1879. Mr. Smith said the certificate had taken him by surprise. The defendant represented on his card that he was a registered dental surgeon, which clearly he was not. Mr. W. J. C. Miller, Registrar of the General Medical Council, was called, and said the defendant's name appeared in the *Register* of 1880, but not since that time. The name was erased through a change of residence. Mr. Paget said the question was whether the defendant had been guilty of an offence under the Act. He inquired whether the defendant was entitled to be registered. Mr. Miller replied that he would not register the defendant's name without the order of the Council. Mr. Paget dismissed the summons, and on the application of Mr. Jones, who said the parties were rival practitioners, ordered the complainant to pay two guineas costs. Mr. Smith asked the magistrate to grant a case on the question of registration, but he refused. We quote from the *British Medical Journal*.

British Journal of Dental Science.

LONDON, MAY 15, 1885.

FEMALE DENTISTS.

AT the present day there is a feeling more or less general, that remunerative occupation has to be sought for by women. As year by year the population increases in our large towns, the necessity for women to seek for such work becomes daily more urgent. Few callings are left without some attempt being made to find within their range an opening for female talent and female enterprize. When the reign of necessity commences sentimental objections and old world theories as to the eternal fitness of things are rudely cast aside. The avalanche of women seeking for employment sweeps before it alike custom, and some would say, those traits of character which have always been held to constitute woman's chief charm—modesty of demeanour and an inclination to adopt a retired and home life rather than the turmoil of office routine or professional work. Dentists have long been accustomed to review in their minds the possibility of women adopting dentistry as their life pursuit; indeed it is well known that many of the fairer sex have already graced by their presence the dental office and work-shop. Many have thought that as practitioners amongst their own sex and amongst children these ladies would occupy a position at once honourable and useful. It must, however, appear open to question whether the infantile mind would consent to part with its grinders with more alacrity when the operation of extraction is performed by one of the softer sex. Women, at least according to old-world theories, have been held to make better assistants than principals. On the other side of the Atlantic this theory is turned to practical account by several leading dentists who employ in their office ladies to minister to such suffering daughters of humanity as habitually there resort. The tact, the good temper, the quiet sympathetic ways of a woman adapt her admirably for such a post.

To us it would appear likely that in England lady dentists will prove a development only of the far distant future, if at all. On the other hand, the employment of ladies in less ambitious, certainly not less useful capacity, of office assistants might very well become more general and more openly recognised. In this capacity they would very soon show themselves, we think, a most desirable addition to reception rooms, if not to work-shops. Their presence would relieve the dentist from many not altogether unfounded fears he may entertain about his reputation in his dealing with hysterical patients. The comfort to lady patients would certainly not be slight were they to know one of their own sex was in the room and close at hand during the administration of anæsthetics ; and again, a woman by the countless acts and touches of refinement which cling about her would rob the dentist's lair of much of the ogreish atmosphere which unhappily still exists in the abode of many practitioners. The busy dentist seldom has time to see to the æsthetic care of his premises—who more fitting than a ladysecretary for this work. Such is the dream of many. Every picture has an obverse side. The ungallant do not hesitate to hint that however well in theory lady helps and lady secretaries may prove, in practice their propinquity turns out to be a not unmixed advantage. Women have tact, but they do not always display it ; their sympathy does not always lavish itself upon the right subject, and the ideal of the tidy woman does not in every case realize the order required by her employer. In fine, the advantages are met by a counterpoise of disadvantages, the merits by demerits, so that the old *regime* in the minds of many offers more hope of comfort and convenience than the new. It would be impossible, however, to settle off-hand a question of this nature and width of scope. Under many circumstances it is well to be believed that women, it may be few, it may be many, could find honourable employment among us dentists. As we have said, the circumstances must be special under which this new departure could be pursued.

DR. SHOEMAKER ON SKIN DISEASES.—Much has of late been said about the close physiological connection between the growth, development and life history of the hair and teeth.

Both are deemed dermal appendages. In dental practice we certainly come across many instances of correlation between dental and dermal lesions. Dr. Shoemaker well-known as one of the most daring and sound dermatologists of the United States, points out in a paper read before the Medical Congress at Copenhagen that many new remedies exist almost unknown in England. His *brochure* is well worthy of careful perusal of dentists who deem their art is not merely mutilation but comprises the treatment of dental lesions as well as of their consequences.

THE EXETER HOSPITAL.—The Medical Sub-Committee of this Hospital report that during the past year 3,823 patients were admitted to the Dental Hospital, and 5,356 operations performed, particulars of the latter being as follows:—

Extractions—

Children under 14	...	...	...	1,189
Adults	...	...	...	2,630
Under nitrous oxide and other anæsthetics				230
				—4,049

Stoppings—

With Gold	...	...	...	48
With White Foil	...	...	...	25
With Plastic Material	707
				—780

Miscellaneous—

Irregularities of the Teeth, Scaling, &c.	...	526
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Total, 5,355

The very important position which really well managed provincial dental hospitals are destined to fulfil are hardly as yet fully realised. Such institutions will, we think, and at no very remote date, be the means of promoting many changes beneficial to the profession. The Exeter hospital has now reached its sixth year and it is hoped that ere long it will possess a building of its own.

ENGLISH DENTISTRY AND ITS CRITICS.—In a former issue we had occasion to animadvert upon an article in the *Dental Register*, which took up a position somewhat hostile to English dentistry. We have been favoured with a lengthy communication from the writer in question, who, while he asserts that our quotations, which we may notice were almost *verbatim*, misrepresents his meaning, still re-asserts the very censures to which we took exception. Our correspondent feels sure from his own experience that work done to save teeth is far less efficient than it should be. As this gentleman appears to have had experience in the United States, we gladly accept his experience in that country, but we must be pardoned when we venture to think that he has been less fortunate in his choice of the English dentists from whom he has taken his examples for English practice.

FRIENDS of the late Peter Squire will be interested to know that the unveiling of a medallion portrait of him will take place at the Pharmaceutical Society's House, 17, Bloomsbury Square, W.C., on Wednesday, May 20th, at 4 p.m., by Sir Spencer Wells, Bart. Cards of admission may be obtained from the Secretary, 17, Bloomsbury Square. Any medical practitioner will be admitted, with a lady, on presentation of his address card.

FŒTAL NUTRITION.—According to the *American Journal of Obstetrics*, Dr. Jerome A. Anderson claims that the time-honored theory of foetal nutrition is all wrong. He asserts that this is accomplished not through the placental circulation; but through a process of endosmosis and exosmosis, taking place primarily from the engorged tubal and uterine walls, later from the amniotic fluid from which nutrient material is taken up at all times by the external surface of the embryo. He claims, however, that after the first month the amniotic fluid is taken into the intestinal tract, and nutrient matter is assimilated and distributed to the foetal tissues as in post-natal life. In accordance with this view the function of the placenta is purely respiratory.

Abstracts of British & Foreign Journals.

ARCHIVES OF DENTISTRY.

"DENTAL CARIES—A CRITICAL SUMMARY."

By HENTY SEWILL, M.R.C.S., L.D.S., Eng.

A Review by F. SEARLE, D.D.S., Springfield, Mass.

It would hardly be worthy of special notice but for the circumstances which attend its publication. Having been originally read before the Odontological Society of Great Britain, &c., and republished in "permanent book form." Its notices have been usually laudatory, and in England they seem to be accepted as correct teachings. Many of its teachings are erroneous.

The question under examination briefly stated is this : Is there living matter in enamel and dentine? And his answer is decidedly in the negative. The author's definition of caries is as follows :

"Caries is a process of disintegration due entirely to external agents. Enamel and dentine are entirely passive under the process and manifest neither pathological action nor vital re-action of any kind."

This is opposed to the theories which trace caries to external agents, maintaining dentine and other tissues are not passive, but show a vital re-action. The upholders of the theory that enamel and dentine contain living irritable matter, are, it is pointed out, attacked with scant courtesy and heaped with approbrious epithets.

Are enamel and dentine vital tissues? If not, the statement that they manifest no vital re-action of any kind is established ; if they do contain living matter; the living matter under irritation must manifest vital re-action of some kind. It does not possess the anatomical conditions for manifesting re-action when irritated as in other tissues. But, that it reacts in dentine under irritation is demonstrated by many evidences.

Mr. Sewille's definition of vital force is quoted.

"The known forces of inorganic matter operating in or-

ganic bodies account for the phenomena of life, and therefore the theory of vital force becomes unnecessary. Physiology concerns itself no more with vital force than with witchcraft and the evil eye. These had their place in men's thoughts **once** upon a time. Ghosts of this kind are no longer visible to those who stand in the illuminated atmosphere of modern thought. It is unnecessary to introduce vital force into physiology, still less into pathology."

Mr. C. S. Tomes, in defining "vital force," says: "There is not the smallest reason for supposing that the ordinary laws of chemical and physical action are suspended in the body; on the contrary, the advance of science brings every day fresh evidence that the phenomena of development and nutrition are in strict accordance with these laws. But we are no nearer to the knowledge of the mystery of life. All we know is that the various chemical and physical actions *are set going and co-ordinated in a living body by an impulse of the nature of which we know nothing*, that is, the laws, of chemical and physical re-action are not *suspended*, but their action is *set going and co-ordinated by an impulse* of which we know nothing." "An admission," says Dr. Searle, "of Mr. Tomes that he does not stand with Mr. Sewill in the illuminated atmosphere of modern thought where the known forces of inorganic matter account for the phenomena of life without leaving a residuum."

The author says: "The anatomy of enamel and dentine would be alone enough to show that they are incapable of anything like pathological action." His anatomy is as follows:

"Enamel examined microscopically, is found to consist of solid prisms lying side by side intimately united and without *any intermediate substance*. Enamel is superimposed as a cap upon dentine to which it is *closely united*. Not only is enamel not capable of intrinsic (internal) changes, it is not in relation with any mechanism capable of influencing it from within. Once formed it *is cut off absolutely* from all vascular connection. Dentine consists of a homogeneous calcareous matrix with a basis of fibrous tissue. It is permeated by minute tubes which are occupied by fibrils. These fibrils endow the tissue with sensibility. They form the only protoplasmic element in dentine.

“Dentine is formed by the calcification of the odontoblasts, the uncalcified centre of each cell constituting the fibril. The vessels of the pulp do not ramify in immediate contact with the dentine, the odontoblasts intervening *cut off* the supply of nutritive material.

“The bearing of these anatomical and physiological considerations upon my subject depend upon the obvious fact that enamel *is totally devoid* of any physiological mechanism whereby either vital or pathological changes can be brought about in it, and that whatever changes the enamel undergoes are induced by external agencies. Not only is the enamel not capable of intrinsic changes, but it is not in relation with any mechanism capable of influencing it from within. To believe in the possibility of nutritive changes in enamel we must first conceive some means by which this mass *devoid of cellular elements and incapable of imbibition** could assimilate nutritive material when brought to it, and must next imagine the conveyance of new and effete material to and from the vessels of the pulp through the odontoblast layer, by way of the dentinal fibrils to the enamel.” On page three, “Dentine consists of a homogeneous calcareous matrix in which no trace of cellular or other structure can be detected.”

These papers teach that enamel and dentine contain no living matter, have no physiology and therefore can have no pathology. They reach the height of absurdity when they state that vitalists *do not* dispute the correctness of the author's anatomy. To quote his own words: “In presence of *our knowledge* of the structure of the teeth, which *strangely they do not seem to dispute*, some recent writers and speakers have talked glibly of inflammation of enamel, of inflammation of dentine, of retrograde metamorphosis of the dental tissues, as predisposing causes of caries. Any one acquainted with the meaning of these terms, must feel disposed to pass by such utterances with the ridicule which this gross and palpable absurdity richly deserves. A man who can speak of inflammation of enamel and dentine, or of retrograde metamorphosis of these tissues must indeed believe that it is better

* NOTE.—Prof. Mayr has shown that enamel contains not less than 6 per cent. of imbibed water.

to rely not on facts but rather upon the phantoms of a vivid imagination." Mr. Sewill's love of the ridiculous, we are told, and his own vivid imagination have run away from facts and led him into a statement for which he ought not to plead ignorance. Vitalists held very different views from Mr. Sewill about dental anatomy and physiology. That men should believe in non-vitality of tissues and yet believe that nutritive and pathological changes take place in these tissues is stigmatised a "an elaborate joke." Clinical evidence alone establishes in many minds that enamel and dentine are living tissues, "*i. e.*, that they contain living matter in direct communication with the nerves of the pulp."

Mr. Tomes when he was unable to explain fully the nature and office of the fibrils, says, after describing them, "That the dentine owes its sensation to the presence of fibrils I think cannot be readily doubted." The conclusion from the facts stated is, "that the dentinal fibrils are subservient not only to sensation in dentine, but that they are also channels by which nutrition is carried to that tissue." Since 1859 no new facts have been discovered to disprove the correctness of this conclusion, but many in favour of this hypothesis.

Dr. Bödecker twenty years later showed that each dental canaliculi contains in its centre a fibre of living matter. There is a delicate net-work within the *basis substance* of the dentine into which off-shoots of the dentinal fibres pass. Living matter cannot be traced throughout the whole net-work, yet it is probable the canaliculi and the whole basis substance of the dentine are pierced by living matter. This is in direct union with the bioplasm bodies of the pulp, of the cementum, and of the enamel.

Prof. Heitzmann says, "That the fibres present in the canaliculi are living matter." Also, "We can trace the ultimate fibrils of nerves to direct or indirect connection with the dentinal fibrils."

These excerpts show that the question is still unsettled in accordance with the positive assertions made in Mr. Sewill's papers.

Three theories have been advocated in regard to the sensibility of dentine: 1st. The presence of nerve fibrils or

living matter. 2nd. That pressure upon the protoplasm in the tubes is conveyed to the nerves of the pulp. 3rd. That vibrations of the molecular structure of the dentine were excited by the contact of the instrument and carried to the pulp. At present the first of these theories is generally accepted. Mr. Sewill seems still to hold to the second theory.

Mr. C. S. Tomes says: "There are various reasons for suspecting that enamel is not completely out of the pale of nutrition from the moment that a tooth is cut, yet further observations are needed before the cavity and importance of of the cement substance, demonstrated by Bödecker can be fully established." Again, "The human tooth is, accepting as correct the researches of Bödecker, which appear in every way deserving of credence, connected with the living organism very intimately, even though its special tissues are extra vascular. For blood-vessels and nerves enter the tooth pulp in abundance; the dentine is organically connected with the pulp by the dentinal fibrils; these are connected with the soft cement corpuscles, which again are brought by their processes into intimate relation with similar bodies in the highly vascular periosteum. So that between pulp inside, and periosteum outside; there is a continuous chain of living plasm."

Mr. Sewill is said to be equally unfortunate in regard to his "*full knowledge* of the histogenesis of enamel and dentine."

Mr. Sewill's statement is met by a categorical denial that once formed, the enamel is *cut off absolutely* from all vascular connection," and Magitot, Kolliker, Schwann, Huxley, Tomes, Heitzmann and Williams are quoted as authorities opposed to his views.

Professor Heitzmann says: "A tooth is epithelial in its first stage of formation the same as all other horny formations. The teeth are transformed from the epithelial into the medullary tissue and from that (the medullary) arise all other dental tissues."

In direct contradiction of the opinions of Prof. Heitzmann, a life long microscopist, Mr. Sewill himself having no claim to be an investigator, assumes complete knowledge of a subject about which there has never been agreement among investigators and sets aside the unanimous decision of the more competent authorities on the points involved.

Literary Notices and Selections.

ENAMEL FILLINGS.

BY WILLIAM HERBERT ROLLINS.

(Concluded from page 373.)

The mould being ready, a piece of enamel is laid on it and both are placed in a gas muffle-furnace such as was described in my first paper on this subject. When the heat has softened the enamel it is pressed into the mould with a long, bent platinum instrument with a non-conducting handle. This, like all furnace work, should never be attempted without protecting the eyes from the heat and glare by smoke-coloured eye-glasses. The mould is to be removed from the muffle and the enamel quickly cooled by placing the mould on a piece of cold metal. After the surface of the enamel is ground even with the mould, push it out by inserting an instrument through the hole in the back of the mould. The gold can easily be dissolved off in aqua regia, when the enamel is ready to be used as a filling.

The cavity in the tooth is to be made dry with absolute alcohol, then coated with a thin mixture of gum copal and ether. A small piece of the imbedding mixture is to be placed in the cavity and the walls smeared with it.

The instruments for imbedding the enamel are kept at a constant temperature by means of minute gas flames. An instrument having a constant heat is essential, as otherwise the enamel will not be properly imbedded, or will be cracked by the changes in temperature. I have devised several complicated instruments, but these two are simple and efficient. The embedding mixture is made by kneading together on a tile a mixture of pure light-coloured gutta-percha with pure light oxide of zinc, in the proportion of one part of gutta-percha to three of oxide of zinc. A little colouring matter should be used. Oxide of uranium does well enough for most teeth. Do not try to cement the enamel with any oxyphosphate or oxychloride. It may be possible to make these cements durable, but this has not yet been done. None of the commercial gutta-percha filling materials will answer

as an imbedding cement because they are not of the proper shade. This matter of colour is important, for if it is too dark the edges of the filling will look unlike the cement ; indeed, the operation will be a failure.

When the enamel is in place the cement which has been pressed out is to be dissolved away with chloroform, and the operation is then complete. If properly executed the filling will be invisible at a distance of a few feet.

If instead of enamel it is decided that porcelain is to be used a somewhat different course is to be followed. The copper mould can be much thinner and need not be covered with gold. A little of the porcelain material ground fine is to be moistened with water and packed into the mould ; then when it is dry push it out. If the cavity is large a piece of previously baked porcelain of the proper colour should be pressed into the soft porcelain. the object being to avoid shrinkage. In most cases this is not necessary. When the porcelain paste is perfectly dry it should be baked in a gas muffle-furnace such as was previously mentioned. Sometimes a thin coating of more translucent porcelain improves the filling. When the filling is composed of two layers, the under layer should be partly hardened or biscuited and the surface made true and even with a file to receive the upper coating which should be put on with a brush. When the porcelain is baked the subsequent operations are like those already mentioned, except that, as the porcelain is stronger than enamel, no special care is needed to avoid fracture in imbedding.

For making the enamel base a furnace is required in which the temperature can be nicely regulated and in which the operator can control the quantity of the flame, for, if there is only a very little excess of unburned gas, the lead is almost certain to be reduced, entirely spoiling the colour of the enamel.

This is also true to a less extent in the case of porcelain. I have published a short paper on this subject in the *Boston Medical and Surgical Journal* and would refer any one who is interested in this matter to this article.

Before coming to the formulæ for the enamels and porce-

lains I wish to say that pieces of artificial teeth should not be ground to use as enamel fillings unless the cavities are very small, because if the body of the tooth is used the filling will be too opaque, while if the enamel of such a tooth is taken the cement shows through the edges.

FORMULA FOR DENTAL ENAMELS.

As the formation of suitable enamels is a matter requiring some practice I would suggest that the formulæ given be tried until a little experience has been gained. Enamel base.

Red or brown oxide of lead	-	-	30 parts
Silica	-	-	400 parts
Carbonate of potash	-	-	100 parts
Cryolite	-	-	500 parts

These should be finely divided, intimately mixed, melted in a white crucible, poured into cold water, dried, ground fine and marked "Enamel Base."

To colour the enamel base, for gray-blue, platinum; for yellow silver, chloride of silver, oxide of uraninm, silver and gold, oxide of cerium, oxide of cerium and gold, glass of antimony either alone or mixed with gold. For blue, cobalt or oxide of silver, Other colours have been tried but the above give good enough results. The amount of colouring must be found by experiment, as the commercial oxides vary in strength ; therefore the following are approximate only :

Grey-blue enamel—enamel base, 100 grammes ; platinum, 50 milligrammes.

Yellow enamel—enamel base, 100 grammes ; uranium oxide, 40 milligrammes.

Yellow enamel No. 2—enamel base, 199 grammes ; cerium oxide, 500 milligrammes ; gold a variable quantity, kaolin 1 gramme.

These materials should be finely divided, intimately mixed, and fritted on platinum in a muffle. Colour of enamel may become less translucent by cooling slowly, by increasing the cryolite, or by adding an opaque substance. Cryolite can be increased to advantage only with those pigments which yield the required colours in the metallic state.

DENTAL PORCELAINS.

No. 1.—Silica	-	-	-	-	-	-	-	50 grammes.
Felspar	-	-	-	-	-	-	-	100 grammes.
Clay	-	-	-	-	-	-	-	5 grammes.
Platinum colour	-	-	-	-	-	-	-	200 mgrs.
Oxide of titanium	-	-	-	-	-	-	-	400 mgrs.

Mix the material previously made fine and grind for two minutes on a quartz slab.

No. 2.—Silica	-	-	-	-	-	-	-	50 grammes.
Clay	-	-	-	-	-	-	-	3 grammes.
Felspar	-	-	-	-	-	-	-	100 grammes.
Oxide of titanium	-	-	-	-	-	-	-	1 gramme.
No. 3.—Silica	-	-	-	-	-	-	-	50 grammes.
Felspar	-	-	-	-	-	-	-	100 grammes.
Clay	-	-	-	-	-	-	-	5 grammes.

INSTRUMENTS.

One of these consists of a copper bowl on the end of a copper rod which extends through the hard rubber handle. This rod is surrounded with asbestos and terminates in a socket for the point. Attached to the handle is the arm carrying the gas burner; the position of which is regulated by the screw. A flexible gas tube connects the gas burner with the main supply.—*Archives of Dentistry*.

THE PRACTICE OF EXTRACTING TEETH WITH NITROUS OXIDE GAS AS A SPECIALTY.*

By Dr. J. D. THOMAS.

Dr. Thomas expressed his conviction that the inhalation of nitrous oxide acts primarily upon the nerve centres, first as a stimulant, then as a narcotic; that the discoloured appearance of the patient while under its influence is due wholly to the accumulation of carbonic acid in the blood, independent of any change of the gas taking place in the lungs. He dwelt on the importance of a large and constant experience in its administration; on the use of fresh and pure gas, the closest attention to detail, and the discernment of the different stages of anæsthesia, so that the operation should not be commenced too soon, nor be continued too long. If attention is given to these matters, the patient will know nothing of the operation, and there will be no unpleasant after effects. The

* A Paper read before the Odontological Society of Pennsylvania, and abstracted in *Dental Cosmos*.

best results in the administration of the gas can be secured by such an experience as comes only to one who devotes his entire time to this branch of practice. In large cities, therefore, its use has been generally abandoned by practitioners in favour of those who make it a specialty. The dentist is thus relieved of the anxiety which to a greater or less degree is felt in the giving of an anæsthetic by one of limited experience. This arrangement also saves time to the dentist, and insures the performance of the operation in the most skilful manner. Twenty years ago an office was first opened in this city for the purpose of tooth-extracting as a specialty. The methods then adopted were not in strict conformity with professional ethics. Whole page advertisements and platform exhibitions were not calculated to gain the respect and confidence of the profession. The enterprise was in consequence slow to gain professional recognition, and the position of the specialist is still with many an equivocal one. The common argument is, that such practice is no part of dentistry, whose mission it is to save the natural organs. Such a practice certainly offers to one so disposed the opportunity to extract teeth that might be saved, and some there are who inconsiderately imagine that such is the daily practice of the specialist. It is claimed that it is only natural that he will not, contrary to his interest, advise the retention of a tooth which he is asked to extract; presuming him to be influenced solely by greed of gain. But as well might such a charge of venality be made against the dentist or the physician, whose interest it might be claimed would be to promote decay of the teeth, and delay recovery for the sake of the fees to be thus gained. Dr. Thomas argued that the extracting specialist provided he be a graduate in dentistry, bears the same relation to dental practice that the various specialists in medicine bear to its general practice. For himself he disclaimed having ever advised the extraction of teeth which, in his judgment could be saved if the patient was willing to submit to treatment. In forming a judgment as to the propriety of extracting a given tooth, several things have been taken into consideration—the character and condition of the tooth; the temperament, disposition, and pecuniary ability of the patient.

It must be remembered that as a rule the patients coming to the specialist are a wholly different class of people from those who are under regular dental care, and that they usually come under great stress of pain.

Philadelphia has a population in round numbers of one million, and nearly three hundred regular graduates are engaged in the practice of dentistry. It is estimated that each dentist has an average of two hundred patients annually—an aggregate of sixty thousand, say six per cent. of the whole number. Of the sixty thousand who have thus given attention to their teeth, eighteen hundred—say three per cent.—come to Dr. Thomas by their dentists' direction for extraction. This number does not by any means include all—perhaps not one fourth—of those among the sixty thousand who submit to extraction, for many operators do their own extracting, and some are sent to other specialists. But, granting that the eighteen hundred represented one half of those for whom extraction was deemed necessary, it follows that notwithstanding all the attention and skill bestowed upon them, six per cent. of the patients under dental care have occasion to submit to tooth extraction.

It is possible that the above estimate has been made too low, but certainly an allowance of four hundred patients for each dentist would more than cover the average. This would aggregate one hundred and twenty thousand, or twelve per cent. of the population under dental care; and allowing the same number of extractions, it would reduce the ratio to three per cent. Of the balance of the population thus inferentially not under the care of the dentist, the large majority labour under the impression that the only remedy for an aching tooth is extraction, and of such are a majority of those who come to the specialist. This class is capable of subdivision. Some who are unable or unwilling to pay for dental service avail themselves of the opportunities offered by dental colleges and dispensaries, with no thought except of relief from pain by extraction. Many of the same class come to the specialist, and a suggestion that the tooth may be treated and saved is met with the query, "Will that stop the pain immediately?" and the information that preliminary

treatment may require a little patience will settle the problem in favour of extraction at once. Occasionally one is thankful for such advice and acts upon it, but if he concludes that immediate relief is preferable to the salvation of the tooth, who can question his right to make the decision, or censure the operator for complying with his demand. Is extraction in such a case malpractice?

Again, many persons present who could well afford to pay the cost of dental operations, but who, from very ignorance of the value of their dental organs, have allowed them to decay past redemption; their rule being to have one tooth after another, as it becomes troublesome, extracted, until at last they present themselves with a view to having the others extracted in order to have artificial ones inserted. These patients generally come in great pain, probably with faces badly swollen, and with their minds settled upon extraction, with most of their teeth in such condition as to make immediate removal the proper procedure. Is it malpractice to accede to the demands of this class of sufferers? Of course a conscientious operator would advise the extraction of those only which are beyond treatment with any reasonable prospect of their being made comfortable, and the retention of the remainder. To advise such people that exposed pulps can be treated, defective teeth filled, and roots crowned would be time wasted.

In many instances there is no doubt that the health of the patient is vastly benefited by the removal of defective teeth and diseased roots which interfere seriously with the mastication of food.

There is another class having nervous temperaments with extremely sensitive teeth, who would rather lose a tooth than undergo the operation of filling. Another class is made up of those who, in spite of efforts for the preservation of their teeth, find only temporary benefit; and thinking their permanent preservation next to impossible, requiring frequent visits to the dentist and considerable outlay of money, have lost heart, and so have determined not to waste time or money in further effort, but resort to extraction of the teeth when they are the cause of the pain. Dr. Thomas stated that

he had received commendatory letters from dental practitioners for his discretion in refusing to extract in certain cases; and also letters of thanks from patients who had received from him their first impulse in the endeavour to save and restore to usefulness their dental organs. He asked special attention to two classes that are the only ones in which the specialist and the dentist are likely to be in antagonism; at least such had been his experience. The first class is where a dentist has made an application to the recently exposed dental pulp of a patient not in hearty accord with the effort to save the tooth. If the pain continues longer than was expected, he concludes that it would be better to be rid of it, and rushes to the specialist, demanding extraction. If in such case a patient will not listen to advice, but insists upon extraction, is the specialist to be blamed for complying with his demand?

The other class of cases in which there has been a prolonged treatment of abscess; weeks, possibly months, of applications and dressings—the dentist promising ultimate success; but the patient finding little if any improvement in the condition. At last, not from sudden impulse, but from the conviction that it will not pay to longer submit to the annoyance, and that the retention of the tooth will not compensate for the suffering and expense which the efforts for its care necessitates, he asks its immediate extraction. If under such circumstances the specialist urges perseverance, and is met with an imperative order to extract the tooth, does not the responsibility for the operation rest with the patient? Is the professional integrity of the complying specialist open to criticism?—*Dental Cosmos*.

HÆMORRHAGE, HÆMORRHAGIC DIATHESIS HÆMOSTATICS.

DISCUSSED BY THE ST. LOUIS MEDICAL SOCIETY.

(Concluded from page 428.)

But as soon as the latter become diseased, as soon as the protoplasm of the capillary walls become changed pathologically, so soon transmigration of the white and red corpuscles in great masses, *i.e.*, inflammation will take place. If

this morbid state of the capillaries is pushed a little further, we have rhexsis, or a breaking of the capillaries, and in consequence of this bleeding. Hemophilia is not a nervous disease, nor is it a blood disease ; but it is a disease, or a tendency to disease, not of the circulatory apparatus in general, but of the capillary system. The boy died on the tenth day after the injury. I account for it in this way : The boy, when he received the injury, was probably in a state of health that promoted the bleeding. The bleeders are not bleeders at all times ; the disposition is there, but I suppose it takes a noxious factor of some kind to increase this tendency ; deterioration of the blood for instance. In an enemic state, there is always a greater disposition to bleed than when the blood is normal ; and the fact that this boy's blood oozed from an insignificant wound for a number of days, was sufficient to change the character of the blood, and with it the whole capillary system, so that general hemorrhage from all the mucous membranes of the body was the result. This is the way I explain it ; I do not know whether I am right or not.

DR. LOVE.—The point I wanted to make is that in my judgment, probably in these so-called bleeders, the temporizing measures are usually used too long—styptics, miserably trashy applications that do no good—valuable time is lost, valuable blood is lost ; this is generally the manner in which the state Dr. Bremer refers to takes place. Then the positive measure is the last chance of succeeding. But I do believe, sir, that if we were called to these cases immediately after they had received the injury, or within a short time, that we would be able to control the bleeding, and there would be no injury to the capillaries ; the bleeding would be checked in a very few minutes by the application of mild styptics. I believe that we are justified in using heroic measures at once, such as the chromic acid, the actual cautery, or the thermocautery, and lose no time. I believe, sir, that the fact that cases are fatal is due to decay. Dr. Bremer states that sometimes they are bleeders, and sometimes they are not. This is suggestive of the fact that they are not congenital bleeders, absolutely, but that they are susceptible to certain noxious influences, malarial fever, etc. I think that there may be

some constitutional condition to make their blood more susceptible to poisonous influences, such as malaria, etc. I believe this to be the case, that if a bleeder is a bleeder, he then is always in danger of bleeding from a slight wound, and that this is a very important point, because if such is the case, and there are strong authorities to the statement, that hemorrhagia at such does not exist; that the congenital hemorrhagic diathesis as such does not exist, and if this is the case, it is a very desirable state of affairs, because it renders the patient himself much more comfortable if he believes that the bleeding is due to certain causes that can be removed. The nervous effect to which Dr. Hughes gives such stress is desirable, and besides, is of general comfort to the parents. In the case of the mother of the child I reported, it is an only child and an only grand-child in a large family, and they are very much disturbed. If I can but hold out to them the idea that the probability is that this bleeding is produced by a cause that can be remedied, that alone will subserve a good purpose, because it will be a comfort to the parents. And I prefer it because it is more comfortable to me; it gives me comfort to think that I may be able to help remove the cause of this bleeding upon slight injury.

DR. ED. BORCK.—Dr. Atwood, what was the complexion of the bleeders of whom you spoke?

DR. ATWOOD.—They were all brunettes.

DR. HUGHES.—I feel quite confident that a child of the age mentioned by Dr. Love could be treated out of the hemorrhagic diathesis by the time it reaches maturity. What I mean to say is this hemorrhagic diathesis is a lowered state of the nervous system, vaso-motor and trophic, so far as I have been able to observe, and that the condition of these individuals in regard to the facility with which they bleed at different times in their lives, being known as bleeders up to the period of puberty, and after the period of puberty and during puberty not being known as bleeders, is indicative of the fact that there is a change of the condition of the system which promotes this tendency. That this condition of the system is transmissible, cannot be denied, but that it is a diathetic condition to the same extent that other

diatheses are, may be doubted. This is all I wish to say on that point. I do not wish to deny any of the facts; they are too patent to gainsay that there are families that bleed with greater facility than others. Every obstetrician knows with how much more facility some women bleed than others. During the menstrual period some women have profuse hemorrhage, while others have scanty hemorrhage all through their lives; and you know that when the menopause comes, some women go over it with gradually decreasing hemorrhage, while others have very profuse hemorrhages and irregularities; these things depend upon the nervous system to a great degree. That is the position that I wish to be understood as occupying on this subject.

DR. BREMER.—I wish to make a few remarks on what Dr. Love has stated. Sentimentality in medicine does not change the pathology of the case, nor the chances of recovery. The very fact that there are families that are bleeders proves that the trouble is a constitutional one; that there is a constitutional tendency, and that this constitutional tendency is transmissible from parent to offspring. So far as the vaso-motor theory and that of the trophic nerves, as playing an important part in this constitutional anomaly, is concerned, I would say that those are mere hypotheses. It is not proven that trophic nerves, properly so-called, exist; they are hypothetical. That vaso-motor influences produce hemophilia, is also a theory, not substantiated by physiology or pathology.
—*Weekly Medical Review.*

SPONGE GRAFTING.*

BY EDWARD C. BRIGGS, M.D., Boston, Mass.

In 1879, Mr. D. J. Hamilton, lecturer on pathology, the School of Medicine, Edinburgh, prepared a paper "On the Process of Healing," which appeared in the *Journal of Anatomy and Physiology*, Vol. xiii. He there made the statement and proved experimentally that in a granulating surface there were no new vessels formed, but that the superficial capillaries of the part were pushed upward, as granulating

Read in Section of Oral and Dental Surgery, American Medical Association, and Reported in the Association's Journal.

loops, by the action of the heart ; the projection being permitted from the fact that the restraining influence of the skin had been removed.

Two years later, in the November number of the *Edinburgh Medical Journal*, Mr. Hamilton appears with a communication on "Sponge Grafting."

He there states that while getting the information for his former paper, he was led to believe that the process of vascularization, as seen on a granulating surface similar to that which occurs when a blood clot or a fibrinous exudation is replaced by a vascular cicatricial tissue, and that the blood clot or fibrinous lymph acts simply mechanically to give support to the projecting loops of capillaries. With this idea he searched around for something artificially to replace the blood clot, and hit upon sponge. This, he reasoned, was a porous tissue which would imitate the interstices of the fibrinous net-work of a blood clot. Being animal tissue it would, like cat-gut or the blood clot, be absorbed under favourable circumstances. I will not go into the details of his experiments, although they would be found very interesting. Suffice it to say that his experiments justified his theories.

He first experimented with the well-known chronic ulcers of the leg. A piece of sponge, prepared as I shall describe later, was fitted to the sore, the edges of the sponge being tucked in under the indurated edges of the ulcer. Over this some simple antiseptic dressing with bandage.

Dressed on the following day the sponge was found partly filled with purulent discharge. On dressing the second day, there was *distinct putrefactive odor*, and the sponge was washed with carbolic solution. The sponge then appeared slightly red at the most shallow parts, and the edges of the wound reached farther inwards over the sponge.

The third day the sponge was beginning to adhere to the granulating surface, and at one point looked as though it were beginning to dissolve. The fifth day the thinnest parts of the sponge were growing hard and seemed to be filling with organizing tissue ; picked at these parts it bled freely, showing that the blood vessels had already begun to climb up through its pores.

The growth was slow, but at the end of three months only a small piece of the sponge was to be seen. The sponge, when originally fitted to the part, was five inches in diameter,

One month later, four months from beginning, Mr. Hamilton showed the patient to the Medico-Chirurgical Society. with no traces of the sponge to be seen, and a healthy granulating surface of only an inch and a half diameter.

This, the first experiment, was satisfactory in every way, proving the theory correct, and showing that sponge would act even better than blood clot ; for while a blood clot would have been destroyed by the putrescent condition of the wound, the more resistant sponge did not seem to be at all affected.

Since Mr. Hamilton's paper, surgeons all over the world have been experimenting with sponge-grafting, and many successful cases have been reported from time to time. Seeing these reports, the idea suggested itself to me that morbid conditions in the mouth, associated with loss of the soft tissues, might also be benefited by the use of sponge.

To be continued)

WHO ARE DENTISTS ?*

By J. A. ROBINSON.

I have chosen as a motto for this paper the words of Pope :

“Be not the first by whom the new is tried,
Nor yet the last to lay the old aside.”

In a profession scarcely twenty-five years old in *national existence*, and one that has been formed among a people of the largest liberty under republican institutions, it is proper to inquire into the competency, character, and integrity of those who call themselves dentists, and see what qualifications are requisite for the discharge of the several duties they must necessarily perform, and of the general operations required of them in the daily practice of their calling. Because a dentist has made a set of teeth which have been worn with a tolerable degree of comfort, and which look respectably well in the mouth, it does not follow that he is a *good dentist* ; neither is it certain that because he has filled a cavity in a

* A paper read before the American Dental Association.

tooth with gold or any other material which seems to do good service that he is competent to do good dentistry. By dentistry in this sense, I mean the repairing and restoring of teeth that are decayed and the supplying of artificial substitutes. This latter branch constitutes the artistic and scientific part of our profession. There is poetry or art in the shade, colour and appearance of a set of artificial teeth ; and science in their organization, adaptation, and articulation. These combined constitute the philosophy of dentistry. A set of artificial teeth to appear natural should seem as though they grew as the trees grow, from the inside towards the outside, and, falling posteriorly on the ridge and on the cutting edge, like the perspective of a painting, give the work the appearance of nature. The natural teeth are neither oblong nor round : the molars are octagonal, with the posterior buccal section falling away and shortened towards the back part of the mouth ; the bicuspidis are wedge-shaped, like the stones that form an arch in any mechanical structure ; and the incisors a little more round, but still retaining the wedge-shape toward the palatine surface of the mouth. An artificial denture, to present a natural appearance, must approximate the rule laid down in this description.

Without scientific principles art is not art, and everything is a bungle. True art is poetic as Apollo and scientific as nature. The true artist lives in perennial glory in his labour or his imagination, for labour is the visible form of the imagination. Anything short of the scientific never fills the whole mind, but only the more superficial part of it. It is also true that the real artist is never satisfied with simply *what will do* ; for it is not the culmination of his highest thought. He is not satisfied with what he does occasionally from a good impulse, unless he has at the base of that impulse a sure and scientific end. Without this scientific principle all the labour bestowed upon a set of teeth is only elaborate nonsense, for they never satisfy the uses they were intended to serve. We do, indeed, sometimes find in nature a physiognomy of the teeth that does not seem to correspond with the physiognomy of the face, but that is only when nature has been obstructed in her endeavour to be true to herself.

and it is seldom that good and perfect teeth, however homely, can be substituted by an artificial set, without the loss, in some degree, of the original character of the face,—so true is nature to her divinity.

Diversity and inequality oftentimes tend to beautify and adorn; it is certainly so in nature; hence the dentist must have a certain aptitude out of which this science and art may be evolved. A man may possess two qualities that may be equal and yet different as he may be an artist and a meshanic at the same time; but it is the combination of these two pualities that makes a good dentist, as the combination of the poetic and the scientific is essential to constitute an artist.

(To be continued).

Dental News.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN

ORDINARY MONTHLY MEETING, April 13th, 1885.

C. SPENCE BATE, President, in the Chair.

The minutes of the previous meeting having been read and confirmed, the President announced that Mr. Charles Alfred Roberts, L.D.S., Eng., of 44, Devonshire Street, Portland Place, had been duly nominated as a candidate for election, and would be balloted for at a subsequent meeting.

The following candidates were then balloted for and elected Resident Members of the Society :—

Messrs. Herbert Stephen Parkinson, L.D.S., Eng., 36, Sackville Street, W.; and William Penfold, L.D.S.I., 30, York Street, Portman Square.

Mr. Weiss (Librarian) announced that by the liberality of the Council he had been enabled to purchase a number of works, several of which were very scarce, and all of them valuable additions to the Society's Library. The names of these were then recited.

Mr. Hutchinson said he had received from Mr. Percy May a model showing a supernumerary tooth erupted between the

upper central incisors, and another showing a typical syphilitic central and lateral.

Messrs. Ash had sent a pair of old forceps of very curious design, and Mr. Newland Pedley had presented to the Society a complete set of the instruments which he used for the application of Hammond's splint. He (Mr. Hutchinson) thought that these would serve a more useful purpose if they were placed at the disposal of the staff of the hospital, rather than locked up in a case in the Museum.

Mr. Gregson suggested that they should be kept in the Museum, but in a separate case, which should be left open, so that they might be available for the use of the surgeons of the hospital when required.

Mr. Turner thought that these arrangements had better be left to the discretion of the Council.

Mr. Newland Pedley then made a communication with reference to the use of Hammond's splint after surgical section of the lower jaw.

He was called upon in January last to apply a Hammond's splint for a man whose lower jaw had been divided in order that an epithelioma situated in the floor of the mouth might be the more completely removed. The case was almost precisely similar to that which he reported in the Society's Transactions about a year ago, and which led him to suggest, in a paper which he subsequently read, that the line of section through the bone should not be vertical. Both patients were under the care of Mr. Clement Lucas, of Guy's Hospital, and in the latter case he kindly made the line of division by two oblique cuts of the saw, meeting at an angle. This greatly facilitated Mr. Pedley's work, and although there were no available teeth behind the bicuspid region, he was enabled to fit a modified Hammond's splint without the assistance of a model.

Fibrous union took place rapidly, but ossification progressed slowly; this was, however, sufficiently accounted for by the fact that a large area of periosteum near the line of division had to be removed with the growth.

Mr. Henri Weiss then read the following communication:

"At the meeting of this Society held in January, 1884, Mr. Bland Sutton read a most interesting paper on Compar-

tive Dental Pathology, in the course of which he mentioned a case in which there had been extensive erosion of the crown of an unerupted tusk found in the jaw of a female elephant. It was conjectured that the erosion was due to the presence of the larva of a dipterous insect ; but the fact that the tooth had not pierced the gum was rather against the acceptance of this view.

In the discussion which followed, Mr. David Hepburn stated he had never known absorption or erosion to occur except when the tooth had appeared through the gum. And during the passage of the specimen round the room, it was noticed that the apex of the crown had been subject to a considerable amount of friction, showing that at some period it had appeared through the mucous membrane.

"I, Sir, have been fortunate enough to meet with a case in which the left upper canine had endeavoured to take up its position in the mouth of a patient aged forty-five, but was resisted by a denture she was wearing at the time. This opposition led to inflammation and suppuration of the investing dental membrane. I removed the tooth without much difficulty, and upon examination discovered deep excavations on its lingual aspect which I at first took to be ordinary caries, but ultimately concluded to be the result of absorption. It would have been interesting to have retained it as a wet specimen, as the cavities were filled with an organised pulpy mass, but I regret to say it became damaged by keeping.

The chief point in this case is the testimony it brings to bear on the condition of unerupted teeth. It has been suggested that where teeth are missing, it is probable that after their partial or complete development they have become absorbed. But from the numerous dissections which have been made disclosing the presence of unerupted teeth, and these cases in which absorption has taken place only after they have pierced the gum, the evidence is strengthened that if once a tooth is developed, it is either erupted, lies dormant, or gives rise to a dentigerous cyst."

Mr. David Hepburn exhibited, on behalf of Mr. T. S. Carter, of Leeds, an Oral Spoon, invented by that gentleman,

for the purpose of preventing teeth or stumps from finding their way into the larynx during operations under anæsthetics. An illustration of it appeared in the January number of the Journal of the British Dental Association.

The President then called upon Mr. Bland Sutton to read his paper on "Injuries and Diseases of the Jaws in animals."

ROYAL COLLEGE OF SURGEONS, EDINBURGH.

During the April sittings of the Examiners, the following gentlemen passed the First Professional Examination for the Licence in Dental Surgery :—Edward Percy Rose, Leicester ; David Thomson, Edinburgh ; and John Trude Fripp, London ; and the following gentlemen passed the Final Examination, and were admitted L.D.S., Edinburgh :—William Wilson, Edinburgh ; James Leslie Fraser, Inverness ; James Johnstone, Nottingham ; Aitken W. Cormack, Edinburgh ; Benjamin John Douthwaite, London ; and Leonard Latham Wilde, Winchester.

APPOINTMENT.

John J. Andrew, L.D.S., Eng., has been appointed Hon. Dental Surgeon to the Belfast Hospital for sick children, Queen Street.

Correspondence.

[We do not hold ourselves responsible for the opinions expressed by our correspondents.]

ENGLISH DENTISTRY AND ITS CRITICS.

To the Editor of "The British Journal of Dental Science."

SIR,—If criticism will do anything to awake English dentists from their apathy in ordinary daily practice, then they are sadly in need of it. There is so much to be written on the subject, and so many points to be shown, that, with your permission, I will ask on a future date for further space, and content myself to-day with pointing out some of the most flagrant faults that strike anyone accustomed to an American practice.

First and foremost to be condemned is the wholesale use of forceps. I allude to the fact that most dentists are in the habit of constantly extracting firm teeth. With a fair average of two per cent that cannot be saved of teeth that patients ask to have extracted, and few English dentists can honestly say that they save their proper proportion. (I will allude in some future letter to the habit English dentists have of obeying the wishes of their patients in extracting teeth and other operations.) The fault lies greatly in their education ; see the shameful monthly report published by the Dental Schools of London, 2,000 teeth extracted to 800 filled ! Is this the education for the future dentists ?

It was my lot, at one time, to be a student at the London Dental Hospital, and the ordinary rule then was "nerve exposed, must be extracted." I should like to see published how many abscessed teeth treated successfully, and pulp canals filled, and how many pulps destroyed and canals filled, then we should know that the present students were getting their foundation of dental knowledge properly laid, and so enable them to save teeth, and in that way raise the English dentists on a par with the Americans. On the education of the student depends his future knowledge, and what opportunities is he likely to have of learning how to fill teeth properly, and seeing demonstrations of fine operating, when Dental Hospitals apply for a demonstrator of soft gold fillings, to devote five or six hours per week to the hospital for £50 a-year. Anyone that such a sum is an inducement to is not likely to have had the necessary experience and ability to teach others, or his time would be more valuable. If it were an honorary post, a really skilful man might accept it, but fancy what value is placed on such a man's services ; less than £1 per week.

Next I would point to the abominable English practice of inserting artificial teeth over roots of teeth (usually without filling them) whereon and wherein particles of food constantly collect to decompose, and from whence pus is constantly flowing. The town of Cologne with its "seventy stenchers all well defined, and several stinks," is sweetness itself compared with such mouths at the end of a few years ; and I need not point out the detriment to the patients health such a state of affairs

induces. And last in my note to-day, but not least, is the greatest cause of English mediocrity, the guinea fee. The British public has been educated up to paying one guinea for any service great or small, under the idea that somehow or other it balances itself. I would point out that this principle tends to prevent those who really are able to good work from doing lengthy operations. Dentists are but human, and it is unlikely they will devote three or four hours to an operation when they can receive their guinea so much easier in the ordinary way. Besides, they can earn so much more by the "guinea" method than by any other, hence they lapse into the use of "plastics," amalgams, &c., do not trouble to save teeth when they can with so little skill and labor and so much more remuneratively, extract them, or cut them off, and make artificial ones in their places. I would ask, is it fair, just, or even honest? The man who takes a guinea from a confiding patient, and does not do the best operation that he can for him, is nothing less than a rogue of the meanest description, because he is not likely to be found out.

Let him tell his patient this operation will take three hours from beginning to end, and his fee will be three guineas. The patient will probably be astonished at a fee of three guineas for one filling, and say, "Mr. —, who is dentist to a dozen hospitals never charges more than a guinea for anything."

If they do not value their dentists' time, skill and materials at such a fee, let them go to mechanics and plasterers, not men who have devoted the best part of their lives to this special study and whose labour entails brain work, manual dexterity of the highest order, and a nervous strain that cannot be overpaid. Three guineas is but a fair fee for such hard labour, and patients should be educated to pay according to what they receive, and no fear on the part of a dentist that he might lose a patient should force him to perform an operation on which he knows no reliability can be placed. This is the hardest hedge to break through, and is the reason why in London with its four million inhabitants there are not ten dentists who daily save all teeth they should, and receive proper fees for so doing. With the full confidence of their

patients, who knowing their dentist is doing his best, he is enabled by constant practice to save nearly all teeth in a manner that will last and be a credit to himself and his profession, and thus enable him to feel on an equality with dentists of a class, one at least of which will be found in every American city of ten thousand inhabitants, though but very few small English towns can boast of one, and many large towns do not possess any. If I have expressed myself strongly on these subjects it is because I feel strongly the necessity of inducing English dentists to think that there is a higher aim and position to be gained as one who saves teeth, rather than as one who extracts them, and makes artificial substitutes, though when these operations are necessary it is not beneath his province to be able to do both, and to do both well.

Yours very truly,

J. LEE.

MONTHLY REPORT OF CASES TREATED AT THE DENTAL HOSPITAL OF LONDON.

DURING THE MONTH OF APRIL, 1885.

Extractions	{ Children under 14.	540
" "	{ Adults.	453
" "	{ Under Nitrous Oxide	847
Gold Fillings		213
White Foil ditto		9
Plastic ditto		583
Irregularities of the Teeeh		124
Miscellaneous Cases		292
Advice		148
		<hr/> 3209

ARTHUR KING, House Surgeon.

DENTAL HOSPITAL REPORTS. NATIONAL DENTAL HOSPITAL

MONTHLY STATEMENT OF OPERATIONS FROM MAR. 1st. TO MAR. 28th.

Number of patients attended	1565
Extractions { Children under 14	312
" { Adults	448
" { Under Nitrous Oxide	554
Gold stoppings	95
Sheets of Gold used independent of Pellets	
Other Stoppings	577
Advice and Scaling	200
Irregularities of the Teeth	197
Miscellaneous	123
TOTAL	<hr/> 2506

ISIDORE FREDERICK PRAGER, House Surgeon.

COMPARATIVE DENTAL PATHOLOGY. INJURIES AND DISEASES OF THE JAWS IN ANIMALS.

By J. BLAND SUTTON, F.R.C.S., Eng., Lecturer on Comparative Anatomy, Middlesex Hospital Medical School.

Continued from page 442.

TERATOMATA.

Among the most remarkable examples of malformations to which the jaws are liable must be mentioned the attachment of imperfectly formed or "parasitic" foetuses, as they are termed by teratologists, in contradistinction to the "autosite," or individual who is the unfortunate bearer of such a mass. The malformation presents itself in two distinct forms :—

(1) Epignathia, and (2) Hypognathia. The etymology of these terms is sufficiently obvious.

(1) *Epignathia*.—In this variety the parasite, excessively modified, is attached to or impacted in the hard palate. Usually it forms a lobulated tumour, consisting of bones, fat, skin, teeth, nervous tissue, lanugo, and foetal tissues, all jumbled into an irregular conglomerated mass.

Up to the present time I have come across no specimen of this curious condition in the lower animals in any museum : but the condition is by no means rare in man. Ahlfeld, in his work "*Die Missbildungen des Menschen*," has collected accounts of no less than forty of these cases. The Hunterian Museum possesses an admirable specimen illustrating the malformation.

(2) *Hypognathia*.—In this malformation the attached foetus occupies the inferior maxilla. Saint-Hilaire has recorded two examples of this condition in calves. In one case the animal was exposed to public view in Paris. The deformity consisted of an accessory head attached to the lower jaw. Saint-Hilaire had no opportunity of examining the anatomical details of the specimen ; the only good service the calf seemed

to get from the abnormal mass was to use it for the purpose of scratching its flanks.

This deformity is very rare in animals, but a goodly number have been recorded as occurring in children. Last summer I observed a very typical case at Stockton-on-Tees. The mass grew from the lower jaw of a child, which was in other respects healthy, and seemed likely to live.

INJURIES OF THE JAWS.

Under this heading it will be convenient to describe two distinct classes of injury. First, those depending on direct violence to the bones themselves. Secondly, the destruction and deformity consequent on alveolar abscess.

1. DIRECT VIOLENCE.—The "Veterinarian," Vol. XXII, contains accounts of fracture of the jaw in horses. In the first case a horse bolted and ran its head against some stone pillars, knocked out some of the front teeth, and fractured its upper maxillæ. These were wired together and the animal made a good recovery. In the second case a mare with a "parrot mouth," that is, with the superior maxillæ extending beyond the lower one, was fastened by a bridle to a ring in the wall. For some reason or other, whilst fastened in this position, it ran back and broke the whole of the anterior portions of the superior maxillæ from the body of the bone. The parts were replaced and fixed by wire fastened to the teeth, and the animal, after exfoliating one or two pieces of bone, made a good recovery.

One of the evil results of fractured jaw was then shown. It was the right inferior maxilla of a rabbit, which had from some cause or the other sustained fracture at the junction of the body with the ramus. No union has taken place, and, judging from the rounded appearance of the opposed surfaces of the fragment, it would seem that the injury must have been of some standing, and that a false joint had been formed. In consequence of this lateral deviation of the maxilla apposition of the incisor teeth had been interfered with, and the lower set had grown excessively. The upper incisors are longer than usual, and their sharp edges came into contact with the gum of the right lower inferior maxilla, leading to inflammation and the deposition of new bone from the in-

flamed periosteum. Some of these molars have also exceeded their length, where they failed to meet the upper set in consequence of the lateral deviation.

Overgrown incisors in rodents, as a consequence of injury to the teeth themselves, are of the most frequent occurrence, but excessive length as a result of fractured jaw is not by any means common.

Vol. XIX. of the "Veterinarián" contains the details of a remarkable case of diseased skull in a horse. The specimen came from Sydney. It appears that in the year 1862 the horse, a wild entire, was roped, and when haltered he broke out of the yard and got away with the halter on. The horse was never recaptured. In the year 1865 the skull was found on the top of a high range of hills, with the halter still upon his head.

The horse was supposed to have been four years old when he broke loose, and as the teeth now denote him to be rising seven, it would appear that he had lived nearly three years with his jaws imprisoned in the halter. The rope was lodged in a deep canal, surrounded by a large deposit of new bone.

Veterinary literature contains some exceedingly interesting cases of fracture of the maxillæ in horses and dogs in which treatment has been successfully carried out. The favourite method of adjusting the fractures appears to be the plan of wiring, now so commonly used in fractured jaws occurring in man.

Dr. Murie has collected and published in the "Proceedings of the Zoological Society," 1865, some interesting cases illustrating a peculiar deformity of the lower jaw found in the cachalot, *Physeter macrocephalus*. The abnormal condition of the jaw of this whale has been described by Beale, in the "Natural History of the Sperm Whale," in the following words;—"The deformity consisted in the symphysis and anterior half of the body being twisted at nearly right angles to the ordinary direction of the bone. The ramus was perfectly normal, and the body from thence onwards to about its middle seemed quite natural. From this latter part, however, it took a quick curve outwards, almost rectangularly; then with a second larger sweeping curve it bent itself some-

what backwards, and further on, towards the anterior end of the symphysis, it again curved itself a short way forward."

The Museum of the College of Surgeons, London, possesses an example of this deformity. The specimen is thus described:—

"The right ramus of the lower jaw of a *Physeter*, the anterior part of which is strongly curved outwards and backwards, in consequence of some injury during youth."

Dr. Murie also gives a figure and description of a similar specimen in the British Museum.

The two halves of the jaw are complete but separated from each other; their size shows the animal to have been young. The length of the two placed in juxtaposition, in a straight median line from opposite the posterior end of the rami to the anterior surface of the bend, is about 65 inches, while the measurement, following the curve, of the right half to the tip of the jaw is 93 inches. Their anterior fourth has a curve towards the left side, in shape not unlike a shepherd's crook, and they have besides a twist on themselves.

The bones presented in places the characteristic appearance of a bone affected with periostitis. The right bone is hollowed and atrophied at the bend, and normal in density at the anterior part of the symphysis; while, on the other hand, the left side has its bend considerably hypertrophied and the tip atrophied.

Professor Flower mentions the existence of a similar specimen in the Museum of the Literary and Philosophical Society, Hull. We must now consider the cause of this curious condition.

Old whalers affirm this to be due to fighting. The sperm whales rush head first one upon the other, their mouths at the same time widely open, their object appearing to be the seizing of their opponent by the lower jaw, for which purpose they frequently turn on their sides. In this manner they become as it were locked together, their jaws crossing each other, and in this manner they strive vehemently for the mastery.

These whales are fat, and in as good condition as those with normal jaws.

The matter has also been investigated by Fischer, who has contributed a paper on the subject in the "Journal de l'Anatomie et de la Physiologie," 1867. He describes an example of this deformity, in the collection of Comparative Anatomy in the Museum de l'Histoire Naturelle de Paris, affecting the lower jaw of a young cachalot from the Indian Sea. The total length of the jaw following the curve is 2.20 m. The normal portion measures 1.70 m., the curved portions consequently 50 centimetres.

Fischer's paper is valuable, for he has added an account of the microscopical characters of the bone, with the assistance of Ranvier. Sections made from the straight portion of the jaws, when compared with those from a healthy bone, are found quite normal in structure, whereas sections taken from the abnormal region of the twisted maxillæ show advanced osseous lesions of the nature of rarefying osteitis. In the alveoli of the affected portion of the bone, there are nodules of new bone; indicating not only that repair had taken place, but also that the abnormality was of long standing.

There are now no less than seven of these curiously twisted jaws described in anatomical literature. Beale has given an account of two, Murie refers to three others, Flower mentions one at Hull, and lastly there is the case of Fischer. The last writer states that there is nothing to prove the abnormality to result from traumatism; there is no trace of fracture, and the deformation is not limited to any one spot, but attacks a considerable extent of bone.

A careful examination of the specimen in the Museum of the College of Surgeons, London, has satisfied me that the deformity in that case is not due to injury; the careful and detailed description given of some of the examples by Dr. Murie still further supports that opinion, although that writer inclines to the view that injury is the cause of the deformity. There only remains the alternative that they are congenital deformities, and on this point there is very strong evidence.

The skulls of those *Cetacea* included in the great division *Delphinoidea*, which embraces the Dolphins, Porpoises, and Cachalots, present in most species a marked want of symmetry in their crania.

This peculiarity is most marked in the case of the great sperm whale or cachalot, *Physeter macrocephalus*.

Taking all these facts into consideration, and remembering that there is no reliable evidence of injury upon any of these peculiar jaws, it will be far safer to regard the deformity of the jaws as a congenital defect rather than the result of injury.

An interesting example of injury to the lower jaw, and recovery therefrom in a fossil animal, is recorded in the "Philosophical Transactions," 1823, by Mr. Clift. Professor Owen, in his "History of British Fossil Mammalia," p. 126, has given an abridged account of this specimen, from which the following details are culled :—

The bone was found in the quarry at Oreston, near Plymouth, produced by the removal of an entire hill of limestone for the construction of the breakwater. The bone is referable to a wolf, or larger species of *Canis*, and belonged to a young, but nearly full-grown animal. The diseased condition is probably the result of injury inflicted by the bite of a stronger animal ; the jaw is enlarged by deposition of bone and ulcerated near the angle, which is perforated by the ulceration consequent upon an abscess or sinus which has eaten through the bone.

At page 564 the same distinguished writer refers to another interesting example of primeval disease which occurred in the lower jaw of the gigantic Irish deer, *Megaceros hibernicus*, which was contained in the collection of the Earl of Enniskillen.

A large part of the outer wall has exfoliated, and a considerable amount of new irregular osseous matter has been formed to replace the lost portion of the bone. Professor Owen attributes the injury to a blow on the part, probably received in combat at the rutting season. I am disposed to regard the diseased condition as secondary to dental irritation, for all the deer tribe are exceedingly liable to inflammation and suppuration of the pulp, leading to alveolar abscess with periostitis, necrosis, and exfoliation of the dead and deposition of new bone ; so that this specimen seems to afford additional evidence that the teeth are a very old source of trouble to their possessors, and also strong evidence concerning the antiquity of such disease.

ALVEOLAR ABSCESS.—This is a very fertile source of trouble for the jaws of animals. On previous occasions I have adduced evidence and exhibited specimens to show that at any rate the majority of these abscesses are the result of inflammation of the pulp of a tooth, due to an injury inflicted on the teeth or to caries, but more commonly the former. In animals the large size of the pulp, the difference in anatomical disposition of the teeth, and the lack of surgical aid render the affection a formidable one in many cases. A careful study of specimens shows how destructive these local inflammations may be, not only to the maxillæ themselves, but even bringing about the death of the afflicted animal, either by inhalation of the putrid material, or the creature, in its fury caused by pain, rushes against obstacles and brings about its own destruction. Alveolar abscess has been observed in the following animals: monkeys, carnivora, deer of all kinds, opossums, kangaroos, rodents.

For detailed examples and drawings of cases see my previous papers on Comparative Dental Pathology.

Alveolar abscess is not only the cause of necrosis and inflammatory thickening of the jaws. Thus in the case of an agouti, *Casyprocta agouti*, which came under my notice, the root of the left lower incisor was found to be surrounded by an odontome.

This tooth-tumour had blocked up the fang of the tooth, and the pulp chamber was filled with secondary dentine. This led to necrosis of the anterior part of the tooth, and the dead tooth had in its turn acted as a foreign body, ending in an abscess giving rise to considerable absorption of the bone on the inner side, and a large deposition of new bone on the outside giving rise to considerable thickening of the body of the maxilla. The tooth could easily be traced to the odontome, which was composed of cementum with patches of dentine here and there.*

The odontome which was found growing around the tusk of an elephant seems to correspond with this one from the

*As on other occasions, the credit of preparing sections of these hard tissues belongs to my friend. Mr. J. J. Andrew, of Belfast.

agouti. It is preserved in the Museum of the College of Surgeons among others of a similar nature.

Fleming, in an article in the "Veterinarian," Vol. XIX, 1873, describes a case in which it became necessary to remove a large excrescence from an elephant's molar, which had grown into the brute's cheek and almost prevented his feeding. A mahout removed it in the following manner. He obtained a thick log of wood and made a hole through it large enough for his arm to pass. Outside he covered it with nails, leaving about a quarter of an inch sticking out of the wood. The elephant was made to lie down, and was fastened with hobbles, while the log thus prepared was placed in his mouth like a bit, and bound with ropes across his neck. Twenty or thirty persons now sat upon his head and trunk (if these be kept down an elephant cannot rise from his side), and the operator introduced his arm through the hole and began to saw off the protuberance. He took several hours to effect it, the elephant all the while lying perfectly still, with the expression of a martyr in his upturned eye. The piece sawn off was as large as one's fist, and the animal soon got perfectly well.

This is perhaps the best place to notice *pyorrhœa alveolaris*, a disease which gives rise to the *absorption* of the alveolar borders of the jaws as the result of irritation from tartar on the teeth.

The following case came under my observation, which is not only a typical example of the disease, and important in its bearing on the pernicious effects of tartar deposited on the teeth, but in the fact of the disturbance thus set up was indirectly the cause of the animal's death. The subject of this observation was a monkey, *Cercopithecus lalandii*, which had lived some time in the Zoological Gardens.

On examining this monkey *post mortem*, the lungs were found to present patches of septic pneumonia; some of the affected spots were bordering on gangrene. Along the free borders of the middle lobes large tracts of collapsed lung tissue presented themselves. On opening the trachea and bronchi pus was found in many places.

On examining the mouth the source of this mischief was at once evident, for on the right side the molar and premolar

teeth of the upper jaw were found encrusted with large rugged and nodular masses of tartar. The alveolar margins of the jaws were absorbed, and the fangs of the teeth were exposed for the greater part of their length. The left side was not so much affected. The buccal mucous membrane was in a condition of ulceration, and the teeth were bathed with pus; there can be little doubt that the purulent discharges were inspired and passed into the air passages, setting up pneumonia of a septic character, ending fatally.

The skeleton of the monkey was in other respects normal; not the least evidence of rickets could be detected, so that the affection was purely a local one.

(To be continued.)

SOME POINTS IN DENTAL DIAGNOSIS.*

By R. F. H. KING, L.D.S., R.C.S.. Eng.

MR. PRESIDENT AND GENTLEMEN.—I feel that an explanation is due from me for bringing before you a subject which has so recently been treated at the hands of an old and much esteemed member of this Society as to be within the recollection of many of you. It is my intention this evening to read a short paper relating principally to the diagnosis of dental caries and its immediate results, the surgery of the mouth having been so fully discussed in the paper referred to.

The first rule to be observed in diagnosing a case of dental caries is to find out as much as possible concerning it from the history and course of the disease. A rule which to my mind is much neglected, at any rate in hospital practice.

The following case is but one of the many instances in which a serious mistake was nearly made merely from neglecting to ask a few questions. A patient presented himself at the hospital complaining of tooth-ache. On being asked which tooth it was that troubled him, he pointed to a second lower right molar, which was decayed. "Oh, yes," said the dresser, "that's it; you must have it out." And out it would have come had it not been for the timely interference of the

* Read before the Students' Society of the Dental Hospital of London, May 11th, 1885.

officer in charge of the room, who suggested that a few more questions should be put to the patient, with the following result: The pain complained of was of a severe neuralgic character, extending upwards over the temple, and backwards into and behind the ear, most severe at night. At times during the day he was quite free from pain. It appeared to start in the right second lower molar, but affected all the lower teeth on that side more or less. This was considerably decayed, but there was no sign of exposure, no inflammation about the gums, or periostitis. To the eye all other teeth appeared sound, and it was not until after a long search it was found that the first right lower bicuspid was badly decayed on its distal surface, below the gum. The use of the probe showed the nerve of this tooth to be exposed. Being again asked to point out the tooth which had just made him jump, he again placed his finger on the second right lower molar, but being a sensible man he allowed the dresser to remove the bicuspid, with the result of entire cure of the neuralgia, as was afterwards ascertained.

Now I hope presently to show that an exposure in one of the lower teeth might have been anticipated, had the dresser put the few questions to the patient afterwards asked by the officer in charge. The next rule is, to carefully inspect all the teeth in the mouth and gums in the immediate neighbourhood, both upper and lower jaws, and for the moment forget all the patient has told you, lest you should be carried away by his over confident assertions as to the offender.

The third rule is, to dry out any cavities that may exist in the teeth, and placing a pledget of cotton-wool in, press firmly with a probe over the neighbourhood of the pulp cavity—a blunt point is preferable. In many cases this will teach us one of three things. If there is an exposure of the pulp, the patient will flinch slightly, and tell us it feels as though we had touched the nerve. But if there is acute periostitis he will complain that the pressure hurts the jaw, and not the tooth. If neither of these symptoms shew themselves we shall be justified in using a pointed probe unprotected by wool.

The fourth rule is, to percuss the tooth or teeth suspected

from our previous examinations, at first very gently, if without result the blow should be increased. It is well always to try one or two sound teeth on either side of the suspicious ones, as the patient, knowing we are touching the one he thinks is the offender, professes to feel pain in it.

Having run briefly through the principal rules to be observed in the diagnosis of all cases of diseased teeth, I propose to attempt to show how these rules can be applied to individual cases and enlarged upon when difficulties arise through the many complications which so frequently render a sure diagnosis difficult if not impossible, unless we follow the example of the Austrian surgeon, mentioned in *Punch*, who told an English doctor that in Austria they always confirmed their diagnosis by a *post mortem*.

It is very difficult to recognise the earliest stages of caries. When it commences in the enamel this structure becomes opaque, whitish, or grey, it then becomes stained brown. Up to this point there is no pain, the patient being unconscious of any disease.

This is soon followed by changes in the dentine, the latter undergoes more alteration than the enamel. It becomes brown in colour, and is sometimes so very painful that the patient cannot clean his teeth. This, though, is not usually the case, as the extent of damage to the enamel is so small that that structure protects the sensitive dentine from friction. Hot or cold fluids do not often cause much trouble; salt, or sweet substances, especially jam, set the tooth aching. Neuralgia is some times present. I have seen cases in this stage which might easily have been mistaken for disease of the pulp. The chief points to be observed are:

History: The pain is not so intense or of a throbbing character. Hot or cold fluids produce little or no unpleasantness, and if any neuralgia be present it is generally of a mild form.

Inspection: Tho cavity is very superficial and not likely to have reached the nerve.

Probing: Pressure with a blunt probe on cotton wool produces no pain, and a pointed probe fails to detect an opening into the pulp cavity, though it may cause more or less pain.

by its contact with the very sensitive dentine of some teeth ; but this is not to be compared with the intense pain produced by touching an inflamed nerve.

Percussion : Even a severe blow gives no pain. As the disease advances these early symptoms frequently subside until it has reached a point close on exposure, when the symptoms again manifest themselves. Now hot and cold fluids, like sweet substances, cause inconvenience. There are numbers of cases of simple caries which pass on to exposure, and even death of the pulp, without causing the patient a moment's uneasiness until disturbed by the dental surgeon, who sometimes gets the blame of having started the trouble. Erosion may be distinguished from caries by its appearance. The cavities are in general regular, the edges usually stooping down to the centre, and the enamel is deficient over the whole extent of the affected part. The dentine has a yellow, polished appearance, and is hard. It is frequently very sensitive to the touch, and sweet substances.

Inflammation of the Pulp : Here from the history we generally find that the patient has been aware for a longer or shorter time that the tooth was decaying, having had the symptoms previously described, of simple caries. Then comes a violent attack of tooth-ache. The pain is now of a sharp, shooting or throbbing character, lasting from a few minutes to many hours, and ceasing only to return on the slightest provocation, such as the application of heat or cold, &c. The horizontal position is particularly apt to start or increase the pain. Hence the sleepless nights we so often hear of when the patient would gladly submit to anything to be relieved, but loses courage again in the morning when an upright position is assumed, and the pain mitigates or ceases entirely.

This pain frequently extends from the faulty tooth to those around it, often involving all the teeth on that side, and sometimes travelling to the opposite jaw. Of this referred pain I shall have more to say presently.

There is almost always more or less neuralgia, which is felt in different parts of the head, neck or arms, and sometimes in more remote parts of the body. It is with these symptoms that we should be particularly careful to use a probe well pro-

tected with cotton-wool, for by this means we can make sure that the pulp is exposed without giving our patients the awful pain caused by the contact of a steel instrument with such a highly sensitive structure. On percussion the tooth is often a little tender, due to inflammation having spread from the pulp to the periosteum.

(To be continued.)

DISCUSSION UPON MR. BLAND SUTTON'S PAPER
"ON DISEASES AND INJURIES OF THE JAWS IN
ANIMALS."*

The President remarked that the applause which had followed the reading of the paper showed how much it had been appreciated. It was certainly a most interesting paper, and one that offered plenty of subjects for discussion. He remembered reading some years ago in Gordon Cumming's book on Lion-Hunting in South Africa an incident which went to confirm Mr. Sutton's statement that wild animals did not escape disease. The author related how he shot a lion which proved to be in very poor condition, and found that it was suffering from an abscess at the root of one of the canines.

He noticed that Mr. Sutton in the course of his paper spoke of Riggs' Disease as being due to the irritation of tartar deposited on the teeth. Now his experience was that cases of Riggs' Disease were met with in which there was no deposit of tartar, and that on the other hand there might be a large quantity of tartar present and yet no Riggs' Disease. He had certainly met with cases in which extensive wasting of the alveoli had taken place, and the teeth had fallen out, but in which there was no tartar to be seen. He should be glad to hear the opinion of others on this point.

Mr. Storer Bennett said he had been much interested in what Mr. Sutton had said about the "cartilage islands" and their connection with the growth of exostoses. It was undoubtedly a most remarkable fact that the parts of the jaw which were most liable to be the seat of exostosis, viz., the symphysis and the angle, should be those which remained

* Read before the Odontological Society of Great Britain.

united by cartilage until a comparatively late period, and that the same held good with regard to the temporal bone. He was not quite clear whether Mr. Sutton said he had actually observed the transition from soft tissue to bone, or whether he had only inferred it. For, unless it had been actually seen, he was very doubtful whether there was such a transformation as would convert a dentigerous cyst into an odontome.

Mr. Henri Weiss said that as the thickening of the bones of the skull, to which Mr. Sutton had referred as osteoporosis, was not a common disease in man, it might be of interest to mention that he had met with a case at the National Dental Hospital which appeared to be of this nature. The patient was a girl of from eighteen to twenty years of age. She had noticed that her teeth were separating for some few months past; previously they had been close together, now they were nearly an eighth of an inch apart. There was bony thickening round the teeth, resembling hypertrophied gum, but which was found to be bone covered with the usual thickness of gum. The supra-orbital and temporal ridges were markedly enlarged; there was also enlargement of the bone about the symphysis and angle of the lower jaw. The patient only applied to know if anything could be done to arrest the changes that were going on, and was not seen again.

Mr. Canton asked whether Mr. Sutton had found exostoses on the lower jaw of animals most common on the outer or inner plate? He had mentioned the neighborhood of the symphysis and of the angle as the most common seats of exostoses of this bone, and had accounted for this by the fact that remnants of foetal cartilage were apt to persist in these situations. He (Mr. Canton) had lately had a case in which a considerable exostosis had formed on the inner plate in the bicuspid region, anterior to the angle. How did Mr. Sutton explain the appearance of an exostosis in this situation? He had been much interested in what Mr. Sutton had said about the occurrence of erosion of the teeth in animals. It was quite clear that if animals were thus subject to erosion, it could not be due to the use of the tooth-brush, as had been suggested.

Mr. D. Hepburn said he could fully confirm Mr. Sutton's statement as to the frequency with which exostoses were met with in the neighbourhood of the symphysis ; they were really very common, though as they did not cause the patient any pain or trouble, and nothing could be done in the way of treatment, it was not often that the practitioner made any note of their existence.

He thought that tartar was more often the result than the cause of disease. As soon as a tooth ceased to be used freely it was apt to become the seat of a deposit of tartar. He had noticed this particularly in the case of a tame monkey which used to suffer occasionally from inflammation of the gums. The teeth got loose and tender, the animal could not bite freely, and a deposit of tartar quickly took place. But as soon as the inflammation subsided, the tartar, which had not had time to get very hard, was soon removed by the friction of mastication.

Mr. R. H. Woodhouse said he had been surprised to hear Mr. Sutton's statements as to the frequency of disease of the teeth and jaws in wild animals ; he thought, however, that it was going rather far to say that the opinion "that disease of the jaws was due to civilization was all nonsense." Did not Mr. Sutton think that animals kept in captivity suffered more from these diseases than they did in their natural state ? He thought, that as regards man, at all events, it had been conclusively proved that the quality of the teeth was immensely influenced by the general conditions of life.

Mr. Hutchinson said reference had been made to the fact that teeth might be lost from Riggs' Disease without there being any appearance of tartar. He thought that this might be partly explained by a fact which was mentioned by Mr. Tomes in his book, but which was, he believed, generally overlooked, viz., that the more highly calcified a tooth was, the less hold it had on the alveolus. Mr. Tomes mentioned this as accounting for the loss of sound teeth in elderly subjects, and it might also explain the fact that some people lost their teeth from apparently much slighter causes than others. The loss of the teeth in animals might also be sometimes thus accounted for. Had Mr. Sutton formed an opinion as to

whether exostoses were more common on the upper or the lower jaw? He (Mr. Hutchinson) had found that their most common seat in the upper jaw was the ridge over the second molar, but that they were not met with so frequently on the upper as the lower.

He had followed Mr. Sutton's remarks with reference to erosion very attentively, but was sorry to say he could not quite understand how he accounted for it.

Mr. F. N. Pedley said the odontome composed of cementum shown by Mr. Sutton did not resemble those described in the writings of Mr. Tomes, to which Mr. Sutton had alluded. Odontomes connected with human teeth were mere hypertrophies of dental pulp which had undergone irregular calcification. The specimen shown bore some resemblance to an *odontome radicaire*, but the latter was chiefly composed of osteo-dentine formed by the calcification of an hypertrophied pulp, and could not strictly be described as a tumour, for it was not a new formation or heterogeneous in structure to the tissue in which it grew. Mr. Sutton's odontome, on the other hand, consisted of cementum, and must either be regarded as an exostosis formed from the peridental membrane or as a true tumour of the tooth.

Mr. Sutton had also alluded to a developing odontome in which no tooth was present. This resembled the class *odontome embryoplastique* of Broca; but there was some doubt in the minds of many surgeons whether these fibro cellular masses were odontomes at all, or whether they were analogous to the encysted fibroids found in the uterus and elsewhere.

Mr. Sutton's explanation of erosion as being due to developmental defects was scarcely consistent with the fact that it so frequently occurred in strong, well-formed teeth; nor would it account for the formation of smooth polished surfaces in erosion and of cavities that had been the seat of caries.

The appearances presented by the skull of the sea-lion, due to hypertrophy accompanied by osteoporosis were strongly suggestive of Sir James Paget's new disease, Osteitis Deformans, and might be described as *Leontisais ossea*.

(To be concluded)

ADDRESS DELIVERED AT THE CEREMONY OF UNVEILING A PORTRAIT MEDALLION OF THE LATE PETER SQUIRE,

At the Pharmaceutical Society of Great Britain, on May 20th, 1885.

By SIR SPENCER WELLS, Bart., F.R.C.S.

Ladies and Gentlemen,—I have not yet seen this medallion, but I have just seen a portrait for the first time in the Council Room, and we shall be able to compare this likeness with that. I do not know whether it can be seen from all parts of the room [Sir Spencer Wells unveiled the medallion amid loud applause]. I had the opportunity of seeing this when it was in the state of clay, while Mr. Brock was modelling it,—Mr. Brock, whom you all know by reputation as a sculptor, a great many personally, and many by his works. Some of them are in this year's Exhibition of the Royal Academy—the statue of Sir Erasmus Wilson, and an excellent bust of Captain Hanham, an old friend of mine, who is, perhaps, not so well known. Mr. Brock wished me to say to you that he was sorry not to be able to be present, and that he had not had the advantage of a personal acquaintance with Mr. Squire—indeed, he never saw him, so that the likeness is taken from photographs, and from the picture now in the Council Room, assisted by the critical remarks of relatives and friends. But I should say it is a very striking likeness, not of Mr. Squire as many of you remember him in his later days, but when he was in the full vigour of his active life. The medallion represents a man of some fifty or sixty years of age, full of vigour and not looking quite so stern as the likeness which is in the Council Room. That is probably the face that he would have in this room when he was examining some pupil not very well up to his work. This medallion strikes me as being a good likeness of Mr. Squire as he was in the days when he was doing some of the good work which so many are here to honour.

Ladies and Gentlemen,—I am not going to trouble you by reading many extracts from the different notices which appeared in the Pharmaceutical and other journals about Mr. Squire soon after his death; but I should like to read

one extract from a very interesting work of Dr. C. J. B. Williams, called "Memoirs of Life and Work." His son is here to-day, and will probably say a few words expressive of the feeling which very many members of the medical profession had for Mr. Squire, and how much they value the association of the work of the pharmaceutical chemist with their own work, and how very desirable it is that they should be supplied with properly prepared drugs, which really represent the active principles of the plants from which they are derived. This extract from Dr. Williams's work expresses the feeling with which a very large number of the medical profession regarded Mr. Squire. Dr. Williams says, "I always felt a strong desire to improve our pharmaceutical knowledge, not only by acquisition of new remedies, but also by more exact information of the true modes of operation of the old, and of the best methods of preparing and combining them. And with this view I found the advantage of cultivating the acquaintance of the most intelligent and advanced pharmacutists, and I feel sure that I profited much by the information which I obtained from them. Foremost among them was my friend, Mr. Peter Squire, to whom British Pharmacy is deeply indebted, not only for his standard work 'Companion to the British Pharmacopœia,'—which has gone through fifteen or sixteen editions, and has no equal for amount and exactitude of information,—but also for the success of his work in vegetable pharmacy, particularly in improving the preparation of extracts, so as to practise, I had little faith in vegetable extracts; for they were of doubtful efficacy, and all seemed much alike in their dark treacly aspect and empyreumatic odour, very unlike the herbs from which they were prepared. But when I came to see Squire's extracts, preserving most of the colour, odour, and characteristic taste of the fresh plant, I began to believe in them, and on trial proved their efficacy—that of *Taraxacum*, for example. I believe that the improvement consisted chiefly in avoiding a high temperature in concentrating the extract, and promoting evaporation, by either diminished pressure, or more simply by an increased current of air. A similar plan is now adopted by most

manufacturing druggists. Mr. Squire has been also very successful in improving the taste and action of opium, and of spirits of wine, by eliminating from them an offensive and noxious ingredient; and he has made several valuable suggestions for the improvement of the processes in the National Pharmacopœia." On this point Dr. Garrod, who is here, and who was one of the co-workers with Squire in arranging our present Pharmacopœia, and in bringing together the Scotch, the Irish, and the English Pharmacopœias so as to form one British work, will tell you something about the ability, energy, and industry with which Mr. Squire worked. I may add something to what Dr. Williams has said as to the care Squire took in preserving the active principles of vegetables. In some of the memorial notices of Squire it is told how Sir James Clark (who was Physician to the Queen) was struck by the care with which Mr. Squire worked in these matters, and he went to him without saying who he was, and after most careful inquiry as to his character and knowledge, obtained for him the appointment he held for forty years afterwards, of Chemist to the Queen. About that time I formed his acquaintance. I was introduced to him more than forty years ago, by Sir James Clark, and at that time, as Dr. Garrod knows better than any one else, there was a great deal of interest about the active principle of colchicum, and as to the various strengths of different tinctures that were prepared from the seeds and so-called roots. Mr. Squire, in order to avoid the varying strength of the tincture prepared from the partly dry root, or from the seeds, did what he could to obtain a more equable tincture by using the flowers. He knew very well that the flowers varied a little in strength according to the season when they were gathered, whether it was dry or wet, but there was not nearly so much difference as that which was obtained by using fresh or old roots and seeds. I saw a great deal of him then, and one could not but notice the great care with which he made these preparations of colchicum and a variety of vegetable extracts, and which he took in getting a more stable and uniform preparation of opium. This was the commencement

of a friendship which lasted as long as he lived. I can say that, during some forty years, I knew no more pleasant acquaintance, and I can look back to no friendship or acquaintance which has given me more satisfaction, or which I recall with more pleasure. One of the events in the life of Mr. Squire, in which he made himself useful to the medical profession, has hardly been sufficiently noticed in some of the memoirs of him—I mean the use of ether in the production of anæsthesia. When anæsthesia was first heard of in England, Mr. Squire constructed the apparatus with which the first experiment in this country was made by Mr. Liston. That apparatus is now in the museum of University College Hospital. I was the first to make use of it in the Mediterranean, where I was at that time, in Malta. I wrote to Mr. Liston to send me an apparatus for the use of ether, and it was sent out by Mr. Squire, and used by me for the first time in the island of Malta. The very first experiments made were those made with this apparatus of Squire's and others very similar to that which is now in the University College Museum. His friendship with Mr. Liston lasted as long as Liston lived, and I have a curious memento here of the friendship of Liston for Squire—it is not quite the thing to bring into an assemblage of ladies; for it is a rifle, with which Liston, who was a great enemy of cats (laughter), used to destroy all the cats that came within range of his bedroom window. It was used for a different purpose by Squire. He used it principally for shooting rooks, and within the last two years of his life I have seen him shoot rooks in my own grounds with the rifle without any spectacles, showing the keenness with which his eyes retained their perfection to the last. At that time, I remember, one day when he was shooting rooks with this rifle, I said to him, "How is it Squire, that you, at eighty-four years of age, retain all your vigour and all your enjoyment of field sports like a boy?" "Well," he said, "it is perpetual activity of mind and body," and I suppose that was the secret. (Hear, hear.) All his life through he was a man of extremely active habits—always working. You may see in some of the memoirs that after a hard day's work he would

go home and continue to work, perhaps making astronomical observations, and then be up very early in the morning making botanical excursions. Throughout his career he lived a life of continual activity, as he said, both of mind and body. Among the most useful of his many good works is the foundation of this Society, of which he was three times President, and the important part he took in founding the College of Chemistry. Of this work on the Pharmacopœia Dr. Garrod will tell you more, and I will not delay you longer. I might have said something about his family and about the very interesting relics that some members of the family have of the Squires in long bygone years; amongst others an old book showing that one of the former Squires had served with Cromwell's Ironsides and had marked in the Prayer Book which was "the favourite psalm of the Lord Protector" and which was the "the favourite psalm of King Charles;" how they "sang this psalm at Marston fight," and how the "Lord General gave the order"—then the "favourite hymn of Cromwell," and the "favourite hymn of King Charles"—"how the poor King fled, the Lord was not with him," and a variety of things of this kind with which I can hardly detain you now. But I would just say, that one of the earliest of Squire's introductions was what is now so common—the electric light. During some of the peace illuminations an electric light, excited by Squires's battery, threw a light along Oxford Street, up to the Marble Arch and towards the Circus, which was a wonder to the people of that day. In conclusion, allow me to express the hope that the work which Squire commenced, and which has been long carried on by this Society, will be continued. It will not do to allow anyone to practise as a chemist and druggist without some such guarantee as to ability and knowledge as that which the diploma of this Society affords to the public. There have been samples of different tinctures obtained quite lately from some of the principal druggists of this city: tinctures of belladonna and tincture of opium in which the amount of the active principle has varied as much as 100 per cent. Some of them have been less than half the strength of the others, and I have no

doubt in some of the inferior manufactories still greater differences would be found. I would repeat in conclusion that the old age of Mr. Squire was an old age of great activity, and I will read to you an extract from a very interesting lecture on old age which was delivered the other day at the Medical Society by Professor Humphrey. He says, "Length of life is to be estimated not by number of years so much as by good work done—not by the amount of time spent in the same fruitless manner indicated by the pithy words of Cowper

'For fourscore years this life Cleora led :

At morn she rose, at night she went to bed'—

nor by endeavours solely to advance our own fortunes, or reputation, or comfort, but by persevering efforts to promote the welfare of our fellow-men." That I believe to be the aim and object of this Society, of which Squire was three times President, and I hope that those who follow him will go on in the same course, and that every member of this Society after many years of like usefulness may be assured of a like reward. (Applause.)

IVORY EXOSTOSIS OF AUDITORY MEATUS.—Mr. Arthur Benson read before the Academy of Medicine in Ireland, in the Surgical Section, on February 20th, 1885, a paper, describing the case of a gentleman, aged 33, in which he had removed an ivory exostosis from the auditory meatus. The case is of interest to Dentists on account of the use made of purely dental methods, a use which seems to have been most successful. He had first used electrolysis, to destroy the vitality of the periosteum ; the apex of the bony growth separated after six weeks. Five months later, he employed the dental engine, and, with the assistance of Mr. Arthur Baker, removed the remainder of the exostosis. The patient was seated in a dental chair ; and, whilst under ether, a deep vertical slot was cut in the base of the tumour with the dental saw. Into this a small chisel was inserted, and a slight blow from a hammer served to separate the remainder of the base, and the growth was removed. Recovery was perfect ; and in January, 1885, a year after the operation, there was no sign of a return, and the hearing was perfect. The operation was, contrary to the recommendation of almost all authorities, undertaken before the canal was completely closed by the growth.

British Journal of Dental Science.

LONDON, JUNE 1, 1885.

THE FUTURE OF UNCARED-FOR TEETH.

No subject than that with which we are now dealing deserves a more eloquent jeremiad. Unhappily, men seldom look sufficiently ahead in questions of this nature to make them care to inquire what will be the future of any of their organs. Sufficient for the day is the toothache, the bilious headache, the cold feet. When the particular evil exists the sufferer sends for his dentist or doctor and requests that he may be freed from his torment with as little delay as need be. He listens with polite attention to the warning bestowed upon his unwilling ears, regarding it as a perfunctory utterance of a professional sanitarian. As years go on, the victim of chronic dyspepsia laments his hard lot, the toothless jaws only remind him that he is the ill-used plaything of a capricious Nature, while his personal share in the provocation of the decay of his body is wholly overlooked and hardly appreciated. It is a melancholy fact that the teeth of the lower-middle and lower classes of Society are as a rule hopelessly decayed and past redemption long before the limits of middle-age are reached. In the daily routine of a large general hospital the truth of this assertion may easily be tested. Case after case presents itself, and even the most casual observation made on the patient's oral cavity, reveals a most calamitous state of affairs. Teeth stunted, chipped and discoloured to a most hideous extent are found together with stumps of teeth broken off at the alveolar edge. The gums swollen, and often the seat of more or less pyorrhœa, while, when the teeth have survived the ill usage to which they have been subjected, they are almost buried beneath in crustations of tartar. So foul are the emanations from the breath of an average hospital out-patient that one is tempted to enquire how the victim can himself endure the charnel house exhalations which he carries about with him. The foulness of the mouth passes description; teeth in every stage

of decay-roughened salivary deposits, heaped with putrefying food *débris*, constitute a sum total hideous enough, and yet one which the owner perpetuates alike to the detriment of himself and his fellows. The habit of sucking at uncleansed pipes and the cheaper and coarser forms of tobacco will naturally tend to perpetuate the evil by cloaking for the patient the ill-odours of his breath, and secondly by giving rise to the well-known tobacco stomatitis from which smokers are seldom free. It is not at present our intention to trace the consequence of this pathological state of the buccal mucous membrane, but rather to see to what it is due, and to consider whether any steps are possible whereby it can be prevented. It is hopeless to look for co-operation by the bulk of the medical profession. Its members either fail to recognise the importance of the hygienic care of the teeth or consider the matter outside their province. To provoke the masses into habits of care in the management of their teeth, must be the work of the dentists, and it is only they who can, if they will, set up a crusade against *early neglect of the teeth*.

Any one who cares to notice the sparkling white lustrous teeth of the gutter arab will see with sorrow how a few years later the same mouth will have become the receptacle of broken, blackened and irretrievably damaged dental appendages. Among the lower middle classes matters are even worse, for here we find the infants suffer not only from bad feeding but from excess of food.

Speaking roughly, we may say that all classes of society are wholly ignorant as to how to preserve the integrity of their masticating apparatus, and are only induced to seek the dentist's aid by cosmetic reasons. The evil is, however, not limited to the individual and his personal surroundings, its results are far-reaching enough to spread an influence over generations as yet unborn. It is indisputable that there exists at present a far higher ratio of unsound to sound teeth than what existed some generations back. It is well known that good, and—unhappily—bad, teeth are among families' traits, hence it comes about, by the slovenly or ill-advised efforts of ignorant patients and quack dentists, that a long

series of generations become impressed with incipient pathological departures. Ill-formed teeth, lacking enamel, or fissured and pitted, crowded mouths, precocious or delayed dentition, are conditions one or all of which present themselves to us. We may do much for the sufferer, but we cannot check the passage on to his children of the same hideous perversion of nature, and unless parents are as a rule rendered more provident, their children must and will pay the penalty. Now much can be done to obviate incipient tooth trouble, and were the bulk of society only aware of this, and the vastly important part that healthy teeth play in an individual's life, they would unquestionably bring their children to competent dentists for inspection. As it is, the poor little creatures come when the mischief is well on its way to completion, and cure becomes one with mutilation. The family dentist has many opportunities of inculcating these home truths, does he avail himself of them, or preferring to be a fair-weather prophet, does he wait upon circumstances and content himself with cure rather than prevention? It is not for us to say; let every one decide for himself; only let us have some evidence that the schoolmaster is again abroad and is bestirring himself in the prevention of the diseases of the teeth.

SEPTICÆMIA FOLLOWING TOOTH EXTRACTION. — An American contemporary records a case of a Mr. Cowgill, a well-to-do citizen, who after the extraction of a tooth was seized with septic inflammation of the jaw, which, leading to general infection resulted in his death.

DENTISTS TRY TO DRAW EACH OTHER'S TEETH.—Nevertheless it would seem that it was something of that sort which happened at Wandsworth when Mr. Andrew George Yeates, of Wandsworth Road, appeared to answer a summons at the instance of Mr. Robert Hugh Hodgson, charging him with using the title of "surgeon dentist," contrary to the provisions of the 41st and 42nd Vic., cap. 33, not being registered. Mr. Morton Smith appeared to support the summons, and said he believed the defendant had never been registered.

His card bore the letters "R.D.S.," meaning a registered dental surgeon. He (Mr. Smith) produced a copy of the registration for the present year, in which the defendant's name did not appear. Mr. H. R. Jones, who defended, said his client was registered, and produced a certificate to that effect, dated in 1879. Mr. Smith said the certificate had taken him by surprise. The defendant represented on his card that he was a registered dental surgeon, which clearly he was not. Mr. W. J. Miller, the registrar of the General Medical Council, was called, and said the defendant's name appeared in the register of 1880, but not since that time. The name was erased through a change of residence. The magistrate said the question was whether the defendant had been guilty of an offence under the Act. He dismissed the summons, and on the application of Mr. Jones, who said the parties were rival practitioners, ordered the complainant to pay two guineas costs. I, says *England*, would not advise either of the dentists to go to his brother practitioner next time he wishes to have a molar drawn.

THE DENTAL COLLEGES AND THEIR EXECUTIVE OFFICERS.—*Baltimore College of Dental Surgery*: R. B. Winder, Dean, 140, Park Avenue, Baltimore, Md.—*Ohio College of Dental Surgery*: H. A. Smith, Dean, 286, Race Street, Cincinnati, O.—*Pennsylvania College of Dental Surgery*: C. N. Peirce, Dean, 1415 Walnut Street, Philadelphia, Pa.—*Philadelphia Dental College*: J. E. Garretson, Dean, 1537, Chestnut Street, Philadelphia, Pa.—*New York College of Dentistry*: Frank Abbott, Dean, 22, W. Fortieth Street, New York.—*Missouri Dental College*: H. H. Mudd, Dean, 500 N. Jefferson Avenue, St. Louis, Mo.—*Boston Dental College*: J. A. Follett, Dean, 219, Shawmut Avenue, Boston, Mass.—*Harvard University, Dental Department*: Thomas H. Chandler, Dean, Hotel Bristol, Boston, Mass.—*Dental College of the University of Michigan*: J. Taft, Dean, Ann Arbor, Mich.—*Western College of Dental Surgeons*: C. W. Spalding, Dean, 1525, Oliver Street, St. Louis, Mo.—*University of Pennsylvania, Dental Department*: Jas. Truman, Secretary Dental Faculty, 1513, Walnut Street, Philadelphia, Pa.—

Dental Department of the University of Tennessee: R. Russell, Dean, 53, N. Summer Street, Nashville, Tenn.—*Indiana Dental College*: Junius E. Cravens, Secretary, 46, East Ohio Street, Indianapolis, Ind.—*Dental Department of Vanderbilt University*: W. A. Morgan, Dean, Nashville, Tenn.—*Kansas City Dental College*: J. D. Patterson, Secretary of the faculty, 800, Main Street, Kansas City, Mo.—*University of California, Dental Department*: S. W. Dennis, Dean, 530, Sutter Street, San Francisco, Cal.—*Dental Department of the University of Maryland*: F. J. S. Gorgas, Dean, 259, N. Eutaw Street, Baltimore, Md.—*State University of Iowa, Dental Department*: L. C. Ingersoll, Dean, Keokuk, Iowa.—*Chicago College of Dental Surgery*: Truman W. Brophy, Secretary, 125, State Street, Chicago, Ill.—*Dental Department of Minnesota College Hospital*: F. A. Duns-moor, Dean, Minneapolis, Minn.—*Royal College of Dental Surgeons of Ontario*: J. Branston Willmott, Secretary, Mechanics' Institute, Toronto, Canada.—*Dental Cosmos*.

Literary Notices and Selections.

THE COMMA-BACILLI OF THE HUMAN MOUTH

By PROFESSOR W. D. MILLER, Berlin.

The great interest which has of late been aroused by the comma-bacilli, and in particular by those of the mouth, appears to make desirable a more thorough discussion of the latter than has yet been published.

That curved bacilli, having an auger-like motion, are constantly present in the human mouth, has been known for years, some few even regarding them as the cause of caries dentium (Johnston's *Dental Miscellany*, 1879). The first attempt to account for them was made by W. D. Miller, in the *Berichte der bot. Gesellschaft*, 1883, page 224. Miller then was of opinion that they were only segments of the common spirilla of the human mouth, as he had observed such spirilla, which showed a division into comma and S-

shaped segments (see Fig. 20 *der Berichte*) ; a view which was at that time received with little favour, but which now might suggest itself to every one, after it has been abundantly proved that comma and S-forms and spirilla, may be only different stages of development of one organism.

After the report of Dr. Koch on the comma-bacilli of cholera Asiatica, Professor Lewis pronounced the comma-bacillus of the mouth, which I shall call vibrio buccalis, to be identical with the former ; and, since that time, hundreds have made repeated attempts to isolate this organism. Having been at work on the fungi of the human mouth for nearly five years, I at once turned my attention to the cultivation of comma-bacilli ; and, after months of continual experimentation, with all possible culture-media, I had come to the conclusion, adopted by all others, except Dr. Klein, that the vibrio buccalis could not be cultivated on gelatine, or on any of the materials now commonly in use. Later, however, I took up the matter again, and, in two cases, succeeded in isolating comma-bacilli. The material was obtained in both cases from unhealthy mouths, showing chronic pyorrhœa alveolaris and hyperæmia of the gums. The material swarmed with comma-bacilli and spirilla. In the first case the isolation was accomplished in a very novel manner. Examining a hastily made dry preparation in water, I observed that a few of the comma-bacilli had not been killed by the staining process, and were moving about rapidly ; while the many other forms in the specimens were deeply stained, and no doubt dead. I, therefore, had before me a pure culture of living comma-bacilli. After removing the cover-glass, I transferred the material to tubes of coagulated blood-serum, and, in 24 hours, had ten large colonies of beautiful comma-bacilli and spirilla, in pure culture. This process was repeated in other cases without success. In the second case, a small quantity of the material was placed in the centre of a flat drop of sterilised bouillon, and, in two or three minutes tubes of blood-serum were inoculated from the edge of the drop. (The very active comma-bacilli soon distribute themselves throughout the drop, while most of the other forms remain in the middle.

The bacillus or vibrio, obtained in those instances, grows very rapidly on culture-gelatine, whether neutral, slightly acid, or slightly alkaline. If a small quantity of a pure culture be taken into the mouth and allowed to become distributed through the fluids of the mouth, the bacillus may be isolated again with the greatest ease.

This fact seems to necessitate the conclusion that this is not the well-known vibrio buccali of the healthy mouth. It liquifies the culture-gelatine very rapidly, more so than the cholera-bacillus ; and its colonies 24 hours old appear under the microscope perfectly round, greyish, and finely granular with a sharp dark border. If cultivated on gelatine sufficiently acid to materially impede its growth, it forms a funnel-shaped depression in the culture-tube, through the evaporation of the slowly liquifying gelatine. The funnel also frequently appears in normal gelatine. The liquified gelatine becomes equally cloudy throughout. In 36 hours, at 20° Cent., the gelatine in the second dilation is completely melted, and runs off the plate.

The form of the colonies, and the rapidity of growth, at once show that this organism is altogether different from the bacillus of cholera Asiatica.

In making plate-cultures from old pure cultures, I have often met with a comma-bacillus different from the above. Whether it be an altogether different and new comma, or only a modification of the other, resulting from the action of the products of putrefaction in the old cultures, I am unable as yet to say.

The colony 24 hours old has a tinge of yellow, is not round and even, but has a very rough, uneven border ; it appears to the naked eye three to four hours later as a white speck half a millimètre in diameter, lying in the bottom of a depression ; the gelatine remains perfectly transparent. Even when, after 48 hours, the whole plate becomes liquified, the colonies, as large as a very small pin-head, float about in the otherwise but slightly clouded gelatine. Cultivated in gelatine, the bacillus has only a very slight curvature, but on agar-agar it cannot be distinguish from the other comma-bacilla.

I have on previous occasions referred to two other micro-organisms in the human mouth which produce comma-shaped forms; one is non-mobile, and does not liquefy gelatine, the other is mobile, liquefies the gelatine, and, in its manner of growth on the plate and in the tube, is very similar to that of the comma-bacilli; it also grows out into wavy threads of various lengths, which, however, could hardly be called spirilla. It is very commonly present in the human mouth, and is easily isolated; and in many attempts to isolate the *vibrio buccalis*, I was, time and again, for a moment deceived, by the appearance of this organism into thinking that I had really succeeded.

All these organisms as well as the Finkler-Prior and the cheese-spirillum, are entirely different from Koch's bacillus, and the continual reference to them, even in medical journals, as an argument against Koch's theory, is astonishing. Even more so is the statement frequently made, that this or that organism is in its reaction upon gelatine "very similar" to the bacillus of cholera Asiatica. It is not a question of similarity but of identity, and arguments like the one cited are only calculated to deceive.

Whether the comma-bacillus of Koch be or be not the cause of cholera Asiatica is not to be discussed here; but, if we wish to establish the identity of any organism with Koch's bacillus, it can only be done by showing that the morphology, method of growth, and action upon all the media commonly in use, are the same in the case of both, and even then we should not be too hasty in pronouncing upon the identity. I have two micrococci from the mouth, which, in their morphology, their growth upon gelatine, potato, agar-agar, blood-serum, and in milk, are identical, but which still are not the same, since one produces a colouring matter, and the other not. Two organisms which grow exactly alike on gelatine may be the same, probably are; but to say that they certainly are the same is scarcely admissable, any more than it is to pronounce silver and mercury identical because the salts of both give a white precipitate with hydrochloric acid. It is only when a number of different reactions prove them to be the same, that we can begin to speak of identity. As for the

statement of Dr. Klein, that it is an easy matter to isolate the vibrio buccalis, I am unable to reconcile it with the assertion of many others, that this organism cannot be cultivated on gelatine ; and I am anxious to know exactly how the isolation was accomplished, how often, and from how many different mouths.—*British Med. Journal*.

THE POISONOUS EFFECTS OF AMALGAM FILLINGS.*

By Dr. E. S. TALBOT, Chicago.

In presenting this subject for your consideration, it is with the intention of provoking a general and free discussion. To advocate the abolition of amalgam fillings would be folly. There are few dentists who are not called upon occasionally to insert these fillings, and those who exclude them entirely, do it to the disadvantage of their patients. Thirty years ago, the better practitioners discountenanced their use, as they considered them likely to supplant the gold filling, to an extent not to be desired, and they also presented a dark appearance in the tooth. An amalgam consists of two or more metals, one of which must be mercury. The first amalgams were made by filing silver coins and mixing the filings with mercury, since that time, manufacturers have changed the metals to suit their ideas, or to claim an original composition. Gold, platinum, silver, tin, copper, cadmium, zinc, and others have been employed.

After the cavity is prepared, the filings are rubbed up with sufficient mercury to thoroughly incorporate them, and the surplus mercury squeezed out. The amalgam thus prepared is packed in small pieces into the cavity, which has been previously dried. Chemists are divided in their opinion as regards the change which takes place at the time of the hardening process, whether it is mechanical or chemical, if chemical, the bond of union is so slight, that one of the principal factors is liberated at ordinary temperatures. When the hardening process takes place, there is a re-arrangement of

* Read before the Central Illinois Dental Society.

molecules, and if the packing is not complete before this rearrangement, the filling is practically of no account. This is particularly noticeable in the application of the Bonwill and How crowns, and render such operations very uncertain. The amalgam does not preserve a tooth, as the gold filling does. The gold which is packed against the walls of the cavity, is not permeable to fluids, so the surface of the cavity is preserved from the contact. The amalgam filling contracts by the evaporation of mercury, and moisture not only enters between the tooth substance and the filling, but permeates the filling in proportion as the particles crystallize coarse or fine, before the hardening process is complete. This is observable to the naked eye, and was proven in my experiments on this subject. By weighing the filling as soon as prepared and again after a lapse of three months, the filling was found to have increased by the absorption of moisture. You know that frequently where shrinkage has occurred, the continuity of tooth structure has remained intact. This is the result of a chemical change between the sulphur of the body and the tin in the filling, producing sulphide of tin. This has a therapeutic effect upon the tooth structure.

Dr. Austin, of this city, lines the cavity with tin foil previous to packing the amalgam. He claims that the surplus mercury will take up the tin, and in case of shrinkage or otherwise, the cavity is preserved by the therapeutic effect of the tin which comes in contact with the tooth structure.

A New York dentist accounts for the bulging of the amalgam filling, by the tendency of the mercury to resume its globular form, carrying the alloy with it. This theory is questionable, as the resistance of the alloy would be greater than the force of the mercury. If this were a fact, the filling would take a globular shape, instead of assuming the shape of the cavity. Haswell, who is recognised as authority by the United States engineers, states that amalgams expand. If this is true, it is another proof that shrinkage is caused by the evaporation of mercury.

Of the many explanations for the peculiar symptoms of mercurial poisoning, the common theory that the chlorides unite with the mercury, producing chloride of mercury,

seems to me unreasonable. The mercury being neutral, and there being other substances in the mouth which have a greater affinity for the chlorides, we naturally ask how the symptoms observed in persons who have amalgam fillings are caused. To satisfy myself as to the real cause, I instituted experiments chemically, and upon animal and vegetable life, the result of which was published in Transactions of the Illinois State Dental Society. These experiments covered a period of two years, and proved conclusively to me, that evaporation from amalgam fillings is going on at all times at ordinary temperatures.

These experiments have been repeated by others with similar results. It was proven that the quantity of vapour produced, depended upon the surface exposed. A sensitive person might have a small filling inserted without poisonous symptoms, and yet would respond to the effect of many. Manufacturers have competed in the attempt to make an amalgam which would not discolour in the mouth. These are harmful for two reasons. The bright surface facilitates the evaporation of mercury and tin, the important factor for the preservation of the tooth is wanting. Those amalgams which preserve the teeth best are the darkest. Mercurial poisoning manifests itself variously—sometimes immediately upon inserting the filling, and again not for years. The symptoms are very marked in the first case. They are characterised by a metallic taste and a peculiar sensation, not unlike the sensation experienced upon holding both poles of a battery. If the tooth contains other fillings, particularly when in close proximity or by contact with plated silver in eating, the shock is felt. Some foods brought in contact with the filling will produce the same result.

Dr. Elihu Pettit, of Philadelphia, mentions a case in his practice where a patient after having a large amalgam filling inserted, partook of raw oysters, which brought in contact with the filling, produced a shock and the following was so intense, that the filling had to be removed. Sometimes an amalgam filling will give such a shock to the dental nerves as to produce the most excruciating pain. Such a case came under my care. The contact of gold and amalgam will give pain

or a shock. I have observed that the gold filling in the crown of a molar coming in contact with an amalgam in the molar of the opposite jaw will produce a peculiarly disagreeable sensation. The most common pathological condition as result of mercurial poisoning is *ptyalism*.

The normal flow of saliva in twenty-four hours is about three pounds. When the flow exceeds this amount, we have an abnormal condition. I have noticed among my patients that those having several amalgam or a number of gold and amalgam fillings are afflicted almost invariably with *ptyalism*, and where operations are made or even on the application of the rubber dam, the glands excrete quantities of saliva, as no inflammation or pain attend this condition, the patient is not aware of its existence, and unless the operator be observing, these cases may pass notice. Metallic mercury when taken internally or rubbed into the skin will produce rheumatic pains. Dr. Hughes, twenty-four years old and a graduate of the Ohio College of Dental Surgery, says he has been practicing dentistry for four years, since which time he has suffered with a dull pain extending from the shoulder to the ends of the fingers at times, but usually to the elbow. He was never troubled with this pain until he commenced practicing dentistry. Recently in an absence of a week from his office with a surveying party, he felt no unpleasantness from his arm, but with the first amalgam that he made upon his return, the same dull pain was experienced in his left arm, as he was in the habit of rubbing it up in the palm of his left hand.

Dr. R. Wood Brown mentions the case of a Wisconsin dentist with whom he was acquainted who was incapacitated for work on account of the swelling pain, and partial paralysis caused by habitually mixing amalgam in the palm of his left hand. I have had a similar experience in the mixing of amalgams in the palm of my left hand. I frequently suffer from a dull pain extending from the fingers to the shoulder. In making some experiments I worked up the mercury in tin with the thumb and forefinger of my right hand, occupying about ten minutes. I immediately experienced a dull pain in the finger and wrists.

A lady visiting in Chicago was recommended to me by her dentist to fill a tooth which he had been treating but had not time to finish. Upon examination I found nearly all the teeth filled with amalgam. I inquired about her health, and although but 18 years old, she told me she was getting old. She had suffered with rheumatism and paralysis agitans for three years. Naturally her health was the best, but since the amalgam fillings had been inserted from three to five years' previous, she had been constantly in poor health. I suggested that she have gold fillings substituted upon her return. Mercurial poisoning from amalgam fillings is likely to manifest itself, particularly in persons having lesions in remote parts of the body. Mrs. S., 46 years of age, was experiencing the ills common to women at her time of life and came to my office in 1880. She was salivated and had a disagreeable taste in her mouth, together with numbness in branches of the facial nerves on the left side. I removed amalgam fillings from the second and third molars upon the lower jaw. The above symptoms gradually disappeared and in six months she was well. Miss A., a school teacher and patient of mine, became greatly reduced from overwork and from chronic bronchitis. She complained of symptoms usual in mercurial poisoning. I substituted gold fillings for the amalgams, and these symptoms gradually disappeared. Mrs. W., also a patient, was suffering from laceration of the *cervix uteri*. She manifested symptoms of mercurial poisoning and upon the removal of amalgams she was relieved. Many persons, not well-to-do pecuniarily, fill positions which demand a cleanly and good appearance and though desirous of keeping their teeth properly have no means to pay for gold fillings, the result is amalgams are put in the teeth of many who get little pure air, are poorly nourished, and should have the best fillings inserted. The profession and the public will welcome a filling which shall take the place of amalgams.—*Ohio State Journal of Dental Science.*

SPONGE GRAFTING.

By EDWARD C. BRIGGS, M.D., Boston, Mass.

Concluded from page 474.

In giving my experiments I will state just what I did, and not what I should now do after the experience I have had. It happened that a patient of mine, Mr. N. G. B., had been annoyed for three years by a deep depression over the roots of the right superior first bicuspid, the result of a severe periostitis. The chief cause of annoyance was that the food was collected there and the pus retained. It was not a simple fistula, but a cavity $\frac{1}{2}$ inch deep, and 3-16 of an inch in diameter. I had tried in various ways to restore the lost tissue, or at least to narrow the opening down to a small fistula. I had made stimulating applications, had created a fresh blood clot to fill the cavity, hoping it might organise, but all to no purpose; in fact, the cavity tended to grow larger, until I thought of trying sponge.

January 26, 1884, I fitted to the cavity a piece of sponge, previously prepared according to formula number one of Dr. Edward Borck, of St. Louis. The formula is as follows: Take a fine sponge, soak it for three or four days in a 20 per cent. solution of hydrochloric acid; squeeze dry, soak for ten days in a solution of iodoform in ether (3i—3); evaporate ether, and keep in air-tight vessel.

Having fitted a piece of sponge thus prepared I dismissed the patient.

The next day I saw him, and not expecting any success, I attempted to pull out the sponge. To my surprise it resisted my efforts. I persisted and pulled it out, disclosing a fresh granulating surface which bled freely.

I packed with fresh sponge. The next day I again pulled out the sponge, meeting with the same resistance. The appearance was the same as the day before, excepting that the space had partially filled up with fresh granulations.

This treatment was pursued for two months, after the first week Mr. B. coming only twice a week. The sponge would apparently become attached for a day or two, and then would work out, necessitating the application of fresh sponge. I never again got so good an adhesion as after the first piece

was put in, and at no time did there seem to be evidence that the sponge would organize; but, either as a stimulant or a support to the granulations, it accomplished what I had failed to do with other means.

The patient now presents simply a small opening admitting a probe about three-sixteenths of an inch. He is not now annoyed by the collection of food or the retention of pus.

As I have said, I had previously tried the blood clot without success, for, owing to the putrescent condition of the sore, it would always come away in a short time without any change in the cavity being noticeable. With the sponge it was different. The discharge went on through the sponge the sponge remaining in position and giving support to the granulations which were not in direct line of the discharge.

Case II. About the 1st of April, encouraged by the success of my first experiment, I undertook another case.

This patient, Mr. J. B., relates that three years ago, after a separation had been made between his right superior first and second molars, he began to have trouble in the gum. About two years ago, while in Honolulu, the annoyance was so great that he consulted a dentist, who lanced deeply down between the teeth. He forced the lancet nearly at the roof of the mouth, and drawing it through between the teeth, to the cheek. Where this cut healed the parts contracted, making the trouble worse. It did not heal, however, between the teeth, and when I saw the patient a year ago, there was a deep depression between the teeth. The gum bled freely on being touched. The annoyance was great, amounting sometimes to severe pain. I suggested contouring the teeth to protect the gum, but as the teeth were both very sensitive and the operation would necessitate a great deal of cutting, the patient declined.

When, the 1st of April, in response to a note from me, I examined him with a view to trying sponge, I found the trouble worse than ever, the hollow between the teeth at one part extending two-thirds up the roots of the teeth.

I began the treatment on the 7th of April. After wiping the surface of the gum with deliquesced crystals of carbolic

acid, and scraping off the slough, I had a fresh, healthy surface to act upon.

I had prepared for this case a sponge in the following manner: I first cleaned it of its calcerous salts by washing in dilute aqua regia, then allowed it to remain for twenty-four hours in a dilute solution of tincture of iodine, squeezed it dry and put it in a saturated aqueous solution of borac acid; ready for use.

To protect the gum and prevent the dislodgment of the sponge, I had previously prepared a piece of hard rubber made to arch over the opening between the teeth, resting upon the gum on either side. Having fitted a piece of sponge to the exposed surface, I painted the gum and the inside of the rubber cap with a solution of resin, and put the cap in position.

In three days I removed the cap, syringed the parts, without removing the sponge, with a 1-200 solution of carbolic acid, and replaced the plate as before.

Three days later I again took off the plate, and this time detached the sponge. It was only attached on one side, but at that point the gum had already grown down a little. On dressing it this time, I returned to the use of sponge prepared as for the first case, having an idea that it worked better. I have seen the patient twice a week up to the present time. The case is progressing very favourably, and the cavity is filling up as rapidly as I could wish.

With the present experience I should now, in treating such cases, first be sure that the parts were thoroughly cleaned. I should have the sponge shaped as accurately as possible, not forgetting to allow for the swelling; for a day or two I should endeavour to keep some pressure upon the sponge to aid in its attachment. After that time I should disturb the sponge as little as possible, simply washing away the discharge with some antiseptic solution. I should wait with patience, not expecting to see great progress in a very short time, and have more faith to believe that if let alone, the sponge would really organize, as in Mr. Hamilton's case.

In regard to its application, I think it can be applied not only to such cases as I have described, but to all cases where

t is desired to reproduce soft tissues. I shall try it and expect success, in the aggravated cases of the so-called "Rigg's Disease," where there is loss of tissue about the roots or teeth.

WHO ARE DENTISTS?

By J. A. ROBINSON.

Continued from page 476.

One of the essential things for a dentist to know is how to make his own instruments, even with the vast variety now in the market. Our instruments are so delicate that they are easily broken, and we cannot do good work with dull tools. I see that instrument-making is made a specialty in one of the dental collèges. We must know how to make instruments in order to be able to repair them ; and we must know how to keep them in order. We cannot dwell too earnestly on the importance of stone-burred serrated points for the absolute welding of cohesive foils. One who has not tried the experiment would be surprised at the difference between dull and sharp serrated instruments. The latter give strength to the filling to stand hard work in mastication and to resist breaking, in the incisor teeth, which is impossible with the former. In a perfect filling all the parts must cohere ; they must be self-upporting and supported, and it is impossible to effect this without perfect instruments. The instrument is the vehicle of labour, and bears the same relation to labour that the car does to the railroad. There are no two operations that are alike or that require the same manipulation, and of course they require different instruments.

Now, it may seem strange to those who have not given the subject thought that the essentials of dentistry are the poetic and the scientific combined. It is only because these words have not been commonly used ; though dentistry has often been called an art, and is to-day fast passing into a science. The true artist is always filled with a silent admiration for his work. Even the dumb, inarticulate material seems to have a pulse that beats in harmony with his own, and he is filled with a conscious power of his own possibilities until his thought passes into deeds. The undulations flit before

his vision and the material will march like files of soldiers to fill the imperfect forms until they seem to become spirit and leap out into life. There is nothing mechanical in the appearance of the work, though it is mechanical in execution. In good dentistry these principles are hidden in the naturalness of the work, as in nature herself.

The great thing to be avoided and shunned by those who are in position and power,—those who are leaders in the profession,—is, in all meetings like this, the appearance in discussion of dictation on the one hand, the diletterantism on the other ; for only the earnest soul will be beloved, and only the gentle and modest soul will be revered by those who are striving to follow and learn.

True art must appear natural and living, and be according to the laws of the living. All living things are according to mechanical and geometrical laws, and nature is perfect art. Upon this platform we must build, for it was upon this platform that the world was built.

It does not seem possible for a bad man to be a good dentist for a bad man's heart cannot conceive the real truth ; and what the heart cannot conceive, the hand can never delineate. Bad passions are always pushed aside while we hold communion with art, for we are filled with a divinity. The artist-dentist is learned, though he may never have been schooled ; he has graduated, though he may never hold a diploma.

Now, it seems to me that there are many good operators among our older members, who began practice before the facilities for obtaining and education were what they are to-day, whose circumstances have precluded the possibility of a graduating course, but who have so lifted up dentistry by their genius and inventions that some acknowledgment of their labours ought to be made by the profession. They have done good work *outside* of the schools ; they have graduated themselves ; and, as in the other professions, the title of L.L.D. is conferred upon those whose labours have helped the world, so might the distinction of a title be properly conferred on these. There are some meritorious persons whom I have met within the past few years,—some grand men,—who are so sensitive that they prefer to remain outside rather

than sit with those among whom they fear they are not welcome. A small ceremony like the one I have suggested or a broad invitation that would declare to such persons that we are not exclusive, would open a door that would bind us in a brotherhood,—that would make us stronger, more generous, and grander. Justice, when it asserts itself, embodies itself in deeds. The great charm of men, or of professions, lies in their moral rectitude.

To be continued.

A DISCUSSION OF SOME QUESTIONS IN DENTAL CARIES.

By W. D. MILLER, Berlin, Germany.

Since the publication of the results of my investigations in the etiology of dental caries, they have been the object of an unusual amount of discussion, and not a few, who in every sentence betray their utter unfitness for the work they have undertaken, have felt themselves called upon to point out my mistakes, and to present what they are pleased to call the logical deductions from my experiments. Moreover, sentences have been picked out without any regard to their connection or date of publication, and put together in the manner which appeared best suited to the wants of the speaker ; or, with striking liberality, statements are attributed to me which will be found contradicted on almost every page of my writings. The discussions of this subject in the different dental societies have shown a lack of knowledge on the part of many who assert their right as teachers, which is not very creditable to them or the profession of which they are members. It is not my intention to reply to anything of this nature which has appeared in the dental journals. There are a few other points, however, which I will notice briefly.

The question has been raised as to the causes of the distention of the dental tubuli, seen in caries. I state, then, that micro-organisms *can*, and often *do* not only distend separate tubules, but push whole tubules aside. I have examined too many sections to be deceived in this ; nor is there anything strange in it. We know that bacteria are unaffected by pressures far above the normal ; we sometimes see, moreover,

capillary blood vessels varicose and distended to many times their natural lumen, by the masses of micro-organisms. "S.," in the *New England Journal of Dentistry*, tells us that 'Dr. Miller seems to account for 'this phenomena' by the simple action of lactic acids." Now if there be anything which is specially offensive, it is to have some would-be critic thus tamper with the results of actual experiments, and I must beg "S." for the future to allow me to promulgate my own views. There is not a sentence in all that I have ever written which would justify this statement. The manner in which the further widening of the tubules, the breaking down of the basis-substance and the formation of caverns takes place, is concisely put in the *Dental Cosmos* for 1883, page 339, where I say : "The micro-organisms commonly found in the human mouth, are capable of readily transforming such softened dentine into substances suitable to their nourishment ; in other words, of consuming it." Again, in the *Independent Practitioner*, 1883, p. 64 : "There is no expansion of the tubules, no formation of caverns, no melting down of the tissue * * * * * where fungi are not present." The manner in which this takes place was further set forth in a paper read before the Central Verein deutscher Zahnärzte, in Berlin, Aug. 3d, 1884. I then said : "If we throw a piece of boiled white of egg into a culture of the hay bacillus (*Bacillus subtilis*), it will gradually become smaller, and in a few days disappear ; or if we add a piece of decalcified dentine to a culture of caries-fungi, it will in a like manner be dissolved. The same thing takes place in caries of the teeth. The same micro-organisms which produce an acid re-action of the fluids in a cavity of decay, possess the power, either directly or by means of a ferment which they produce, of dissolving the decalcified dentine." Either of the above quotations seems to present the case with sufficient clearness. The fungi, demonstrably and as I have *proved* by the experiment cited above, do possess the power of dissolving the decalcified dentine, or digesting it, if you please ; but not a single fact can as yet be produced to show that they can soften *normal* dentine, either directly or by means of any ferment which they produce. In fact,

the only experiments which have ever been made at all, point directly to opposite conclusion. I have exposed pieces of dentine for years to the action of micro-organisms in non-fermentable solutions, without producing the slightest softening.

We would pay very little credit to the labours of a man who, not having mastered addition and subtraction, would attempt to solve a problem in calculus, yet there are not a few of our profession who, without knowledge of the simplest principles of bacteriological investigation, or without the least experience in bacteriological experimentation, do not hesitate to present a solution of the most difficult problems. Dentists get up in their various societies and remark that they have "repeated the experiments of Dr. Miller, and have not obtained the same results." Milles and Underwood, who have done more work of this nature than any American experimenter, if I may not say more than all American experimenters together, and whose communications are entitled to respect, reported that they had repeated my experiments; they were, however, consistent enough with the practice of scientific investigators to give in detail the manner in which they did it, and it was at once evident that their experiments were as unlike mine as they could well be. Consequently, I cannot be expected to consider it as a very serious matter when Quisdam chooses to get up in a dental society, and say that he has repeated my experiments without obtaining the same results.

I have proved that the softening of the dentine in caries is nothing more nor less than a simple decalcification; that the acids by which it is produced may be readily detected about decaying teeth; that these acids are formed by the action of certain micro-organisms, which *being independent of the presence of air*, may form acid within the substance of the dentine; furthermore, that the same fungi have the power of dissolving the softened dentine. There is not a step in the process which has not been proved and made clear by repeated experiments, and which does not suggest its own reasonableness to every impartial practitioner.

(To be continued.)

Dental News.

FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

The following gentlemen passed the First Examination for the Licence in Dental Surgery, on 23rd April:—

Mr. Ed. J. Hordern, Birmingham ; Mr. Frederick Dule, Sheffield ; Mr. W. B. Tolputt, Sheffield.

The following passed the Final Examination, and were admitted Licentiates on 25th April:—

Mr. Leonard Herbert, West Kensington ; Mr. Frederick J. McCulloch, Glasgow.

Two candidates were referred at the First and one at the Second Examination.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

The next meeting of the above Society will take place at the rooms, 40, Leicester Square, on Monday, June 1st, at 8 p.m.

Casual Communications by Messrs. St. George Elliott, C. W. Dunn, S. T. Hutchinson, A. Miggs and F. Carton.

Papers by Mr. C. S. Tomes, on Experiment on Amalgam Filings, and by Dr. G. Field on Pivot Teeth attached to Adhesive Gold.

David Hepburn } *Hon. Secs.*
R. H. Wodhouse }

STUDENTS' SOCIETY OF THE DENTAL HOSPITAL OF LONDON.

ORDINARY GENERAL MEETING, held 11th May, 1885.

C. TRUMAN, Esq., President, in the Chair.

The minutes of the previous meeting were read and confirmed.

Mr. A. Kendrick signed the Obligation Book and was formally admitted to membership by the President.

The following gentlemen were proposed as members by Mr. Campion, and seconded by Mr. Colyer : Messrs. C. C. Robinson, W. H. Kendall, A. W. Frost, F. Miller, A. S. Hayman, D. H. Harris, H. Eskell, F. Lormon, G. Seymour, C. E. Peckover, R. F. Reading, P. S. Fairbank and A. P. Cater.

Messrs. J. Palethorpe and W. A. Moore were balloted for and unanimously elected members of the Society.

The President announced that he had received a letter from Mr. R. H. Woodhouse, informing him that in the opinion of Mr. Arthur S. Underwood and himself the paper read before the Society by Mr. H. Baldwin in 1883 was most worthy of the Society's prize for that year.

Mr. Campion proposed a vote of thanks to Messrs. Woodhouse and Underwood for their kindness in acting as judges of the prizes for the years 1882 and 1883. This was seconded by Mr. England and carried with acclamation.

Casual Communications being called for, Mr. C. Winterbottom showed models of the jaws of a patient who had been twice operated upon for polypus of the nose, part of the left superior maxillary bone having been removed at each operation. Mr. Winterbottom also showed three obturators which had been made for the patient at different times, and by which the removed bone had been replaced.

Mr. Barstow showed and presented to the Society models of the jaws of a child whose temporary teeth had been lost and the permanent teeth delayed through rickets.

Mr. Mansbridge showed models exhibiting an unusual malposition of the upper central incisors and Mr. Gabriel a curiously shaped upper molar and a wisdom tooth having some enamel nodules on its fangs.

Mr. Jeffrey presented to the museum two molar teeth joined together by exostosis.

The President then called on Mr. King for his paper on "Dental Diagnosis," which was listened to with great interest and produced an animated discussion, in which the President and Messrs. Baldwin, England, Campion, H. Williams, and Whittaker took part,

After an able reply from Mr. King, the President proposed a vote of thanks to him for his excellent paper, which was carried with much applause, after which the meeting terminated.

The next meeting will be held on Monday, October 12th, when Mr. C. F. Rilot will read a paper upon "The Adaptation of Artificial Crowns."

VACANCY.

The Dental Hospital of London, Leicester Square. The post of Assistant Dental Surgeon is vacant. Application with testimonials by Monday, June 8th.

Correspondence.

[We do not hold ourselves responsible for the opinions expressed by our correspondents.]

ENAMEL FACINGS.

To the Editor of "The British Journal of Dental Science"

SIR,—In your number of May 1st, I see, under the heading of "Literary Notices and Selections," a description given by Dr. William Herbert Rollins, in an address read to the Boston Society for Dental Improvement, Oct., 1884, and which had been reported in the *Archives of Dentistry*, of his manner of inserting enamel fillings. Dr. Rollins says that the use of enamel fillings has been an everyday affair with him for the last six years. I am very much interested in the subject, and in the early part of 1884, I brought it before the attention of the Odontological Society of Great Britain, and sent several specimens and the description of how for 16 or 17 years I had been constantly applying them and the manner I pursued to prepare them. I see that it is very different to the way taken by Dr. Rollins, and I believe a much simpler and more rapid process; perhaps you may think it worth while to give this short communication of mine a little place in your pages.

After preparing and deepening the cavity I take a small piece of wax (one part of white wax to five parts of yellow), heat it over a spirit lamp, attach it to a little plate of lead and press the wax on to the tooth in which the fracture or cavity exists; I take two or three impressions. I thus make the plaster model, and on this model I form my piece of enamel, leaving as long a shank to it as I can, and fitting it as accu-

rately as possible. I fit it again to the tooth in the mouth, and when it is as I desire, with regard to colour, shape and fitting, I dry the cavity with a hot-air syringe, fill it with Essfelder's cement, dab the piece of the enamel with the cement, and force the little piece of enamel to its place; after trimming it but little I cover it with valeline or mastic varnish, let it harden well before I polish it—I do this generally on the following day.

The materials I use are pieces of mineral teeth which are ground to the shape required, or cuttings from human, or hippopotami, or bullocks, or lambs teeth. Almost the whole of the dentine is removed, leaving only the enamel and when that is fixed into the cavity after having been well-fitted, and if it has a good shank or holder I know no filling so durable. For appearance, where skill and patience have been used, a front tooth may be restored in such a manner that it is impossible to detect the mending without an examination with the mirror; a molar or bicuspid can be restored when badly broken, so that mastication is complete and no space is left by which the entrance of food torments the gum. The time required is very short for the preparation of the piece of enamel is readily done on the lathe in a few minutes and the fixing of it generally does not require more than from a quarter to a half hour.

The great thing is to get a good model, and after having tried many things I believe that wax gives the best results. The plaster model should be covered with a coating of wax and resin, thus rendering the edges hard; the piece of enamel should be fitted as accurately as possible, and every precaution should be taken to keep the cavity and tooth dry until the cement has well hardened. It should be varnished and left for several hours before it is finished and polished. If all these precautions be taken, and they are the same as must necessarily be taken to succeed with any filling we may have to execute, I think few would hesitate to say that the result is more sightly and more serviceable than any contour filling however elaborate it may have been performed.

I think it a pity that this manner of restoring form and appearance to broken and badly decayed teeth is not more

generally used, we should see less of those unsightly, huge, blackened amalgam stoppings, and also fewer of those enormous gold contour fillings which, however admirable they may be as evidences of great skill in manipulation, argue a great absence of an æsthetic appreciation of what would be desirable in the restoration of defective teeth.

In these operations I cannot help suspecting that very often the dentist has neglected to reflect (what should always be the first consideration) what conduct he would like should have been pursued, should he himself or one of his own family have been the patient.

I am, Sir,

Your obedient servant,

C. W. DUNN.

Florence, May 9th, 1885.

"A PRACTICAL HINT."

To the Editor of "The British Journal of Dental Science."

SIR,—While turning over the leaves of your Journal, I am always on the look-out for hints which may be of some practical use in the surgery or laboratory, and believing that others do the same I trust that the mention of this small article may be of use to your readers.

"Liebreich's drop bottle for the eye" is the most handy little bottle I have ever used for such thin liquids as chloroform, carbolic acid, creosote, etc. It is very cheap and always effective and can be obtained of any surgical instrument maker. The glass tube should be thick and the cork good.

R. DENISON PEDLEY, L.D.S., M.R.C.S.

17, Railway Approach, London Bridge,

ENGLISH DENTISTRY AND ITS CRITICS.

To the Editor of "The British Journal of Dental Science."

SIR,—By some error you read my *nóm de plume* of "I see," as "J. Lee." I presume it was carelessly written. If you think wise to do so some mention should be made of the fact in the next number of your valuable journal.

Yours, &c.,

"I SEE."

British Journal of Dental Science.

No. 419. LONDON, JUNE 15, 1885. VOL. XXIX.

EPITHELIOMA OF THE TONGUE.

By FREDK. BOWREMAN JESTETT, F.R.C.S., Eng.

(Surgeon to the Cancer Hospital, Brömpton.)

The tongue, is subject to cracks and ulcers either simple, syphilitic, tubercular, or traumatic, that is caused by the irritation of a carious jagged tooth, an ill-fitting plate, or some foreign substances in the mouth. These ulcers and cracks are often difficult to distinguish from cancer. Hard nodules are also frequently met with in the tongue, substances which are by no means easy to diagnose, whether they are malignant, deeply seated abscesses, or encysted growths.

Cracks and fissures occurring under the age of 30 may as a rule be at once arranged among the non-malignant class and will be found speedily to heal by appropriate treatment, such as a slightly alterative and stomachic course of medicine and appropriate diet. The fissure to be touched with nitrate of silver or sulphate of copper.

Should there be any history of syphilis, then a course of iodide of potassium or a mercurial treatment will speedily cause the fissure to heal. The syphilitic fissure or ulcer is, as a rule, not difficult to distinguish from a simple ulcer, as its base is more indurated, the ulcer is of a different character, and the edges are more or less everted, there is also a peculiar yellowish or coppery tint of the soft palate, with possibly some ulceration of the fauces. This coppery tinge of the palate is most characteristic, and rarely, if ever absent in a greater or less degree.

Primary chancre of the tongue is very rarely met with although I have seen a few cases where there could be no doubt as to the character of the ulcer. These, I am sorry to confess have always been in men.

The injury caused by a jagged tooth or other foreign body,

often most angry looking, deep, with gagged edges, very painful, easily bleeding, is generally readily distinguishable, as the source of mischief and irritation is palpable and upon its removal the ulcer speedily heals. These ulcers if neglected and the cause of irritation is allowed to remain frequently take upon themselves a malignant character. This form of neglected irritation, indeed, is in my experience one of the most frequent precursors of cancer of the organ. It is therefore, most important that this should be borne in mind and if at any time a tooth is found decayed and presenting a sharp, rough surface it should be at once extracted.

In all these cases a mouth wash of borod-glyceride, or chlorate of potash, is most useful in promoting healthy action in the ulcer.

Deeply seated abscesses or encysted tumours are often almost impossible to diagnose with certainty until the surgeon has cut down upon them.

A case was sent me a short time since from the country. A young man, *æt.* 29, who had a small, hard nodule of the size of a nut, situated in the right border of his tongue about an inch from the tip. There was much pain at times, not increased by pinching. However, no fluctuation could be distinguished. There was no external cause of irritation, in fact, it had all the appearance and feel of a scirrhus nodule. On passing a grooved needle into it, pus escaped, the abscess was then laid freely open, and a speedy recovery followed. These abscesses or encysted growths usually occur in the tongue substance (more in the centre of the organ), a situation which is rarely the seat of cancer. Usually, indistinct fluctuation or elasticity can be felt in these tumours, when by passing a grooved needle or a fine aspirating trocar into them their true nature is discovered and by freely opening them, as in the case above narrated, a speedy cure is effected.

Cancer of the tongue is, I believe, always of the epithelial type. Scirrhus is rarely, if ever, met with in the tongue. Thus out of 190 cases collected by me as occurring at the Cancer Hospital only one was ascribed to scirrhus, and in this case no microscopical examination of the growth was made. I should therefore be very much inclined to think it was not

scirrhus. Of 66 cases collected by Mr. Barker, from the University College Hospital Case Book one is described as distinctly of the nature of scirrhus. All observers, however, are agreed on this point that the tongue is liable to be attacked by epithelioma alone of all the forms of carcinoma. Sarcoma of the tongue is likewise excessive rarely met with. Professor Jacobi, of New York, in the *American Journal of Obstetrics* for 1870 reports a case however, of an infant, in which the day after the child was born a tumour the size of a hazel nut was discovered. It grew somewhat rapidly, and Dr. Jacobi removed it with the galvanic ecraseur when the child was two or three months old. The growth was examined microscopically, and pronounced to be one of saicuma being made up of tissues, comprised partly of sound, but chiefly of spindle cells with but little inter-cellular substances.

Epithelial cancer is more frequently met with in the tongue than any other organ or part of the body excepting the uterus. Thus in 860 cases of epithelioma collected from the Cancer Hospital Case Book, 190 were situated in the tongue or at the rate of 22 per cent. It also stands very high in the scale as compared with other organs affected by any form of cancer.

At the Cancer Hospital, of a total of 2,227 cases of cancer which I have collected and analysed as occurring in patients at that hospital during the last ten years, the tongue has been the seat of the disease in 190 cases, or at the rate of 8.5 per cent. The mammæ were attacked, the left in 300 cases, the right in 315 cases. Both breasts were the seat of the disease in 25 cases, and the breast and axilla in 49 cases, making a total of 697 cases so affected, or at the rate of 31.3 per cent. The uterus was attacked in 274 cases, or at the rate of 12.3 per cent.

We cannot do better than compare these figures with those collected by Mr. Sibley, Sir James Paget, Von Winiwarter, Mr. Morris, and Mr. Arthur Barker, and it is interesting and satisfactory to observe how nearly similar the total results of these observers are with my own. In Mr. Barker's 343 cases he noticed as many as 16.3 per cent. of cases of cancer the tongue, whereas Mr. Sibley in 520 cases found the tongue

affected in only 2.6 per cent. Sir James Paget obtained a result of 6 per cent., Von Winiwarter 8.3 per cent., and Mr. Morris in 501 cases, collected at the Middlesex Hospital, found 7.1 per cent. In the gross number collected by all of these surgeons, amounting to 2,412 cases, we have a result of 8 per cent. of cases of cancer of the tongue, or only 5 per less than those collected in my 2,227.

One cannot but be struck, on examining the above tables, at the exceedingly low percentage of tongue cases in Mr. Sibley's list, and the very high rate in Mr. Barker's, whereas the percentage of cancer of the breast is the same. It is difficult to account for this, unless, as Mr. Barker suggests, many of the cases coming to University College Hospital are sent from Wales, and probably the miners may be more prone to cancer of the tongue than other people. I have been in correspondence with some of the medical men of Wales, but have failed to obtain any confirmation of this hypothesis. It is however, suggestive, and a point well worthy of further inquiry. This very high death rate of Mr. Barker's is the more extraordinary, as we find the rates obtained by Sir James Paget, Von Winiwarter, Mr. Morris, and myself, practically the same.

One cannot be astonished that the tongue should be a favourite seat for cancer; indeed we can only be surprised that it is not more frequently attacked than it is, and that the form of malignant growth should be limited to epithelial cancer. There is no organ in the body which is subjected to such rough treatment, and from its structure and surroundings one can understand how suitable a situation it must be for the growth of the disease. It has, first, what we may call its natural enemies, carious and broken teeth, whose rough, sharp edges are constantly wounding and irritating it; the large quantities of tartar which so frequently collect around the teeth (especially the back of the lower incisors), is a constant sources of irritation to the tip of the tongue.

Surgeons or general practitioners cannot be too alive to these sources of evil and recommend any patients who may consult them for ulcers or soreness of the tongue if there be any carious teeth or collection of tartar,

to go at once to the dentist to have the offending tooth or substance removed. Dentists are often too apt to cut off old, decayed teeth, leaving the diseased stumps in the jaw for the purpose of getting a better foundation for the plates. This practice cannot be too greatly deprecated, as the diseased stumps are often the foci from which spring malignant disease, as the gums are always kept in a state of constant inflammation, and apart from the danger already alluded to, the stumps eventually become more and more absorbed, and eventually have to be removed and then the plate is useless. Whereas, had the dentist made a clean sweep of the stumps in the first place, the gums would become hardened and the plate would last for years. I have seen many cases of epithelial cancer of the gums spreading to the floor of the mouth and tongue commence in this manner. Of that I am convinced. Another point I would like to point mention is, that it is the practice of some people never to remove their plates and artificial teeth from their mouths, by which means the gums become spongy, foreign matter accumulates under the plate, and the plates themselves often become completely fixed with tartar deposited around them. A gentleman recently consulted me for an ulcer under his tongue. On examination I found he had had a plate fixed to his lower jaw with two incisors and some molar teeth on each side. His dentist told him not to remove it, which instruction he strictly observed, with the result that he had an epithelial cancer formed under his tongue. The plate was thickly encrusted with tartar, the gums were spongy and inflamed, and altogether he was in a terrible plight. This disease was undoubtedly due to the indiscrete advice of his dentist.

Among the extraneous sources of irritation must be classed false teeth, and plates which frequently fit very imperfectly, and are often, among the lower classes, made of inferior materials. Smoking is another common source of irritation, more particularly the short clay pipe, the tip of the tongue being constantly placed against and playing with the jagged end of the stem, causing, in the first instance, a blister or an excoriation.

Professor Ludwig has shown that carbonate of ammonia,

carbolic and acetic acids, which are present in the acrid products of dry distillation of tobacco smoke are very injurious. The prolonged action of these upon the tongue often gives rise to a kind of chronic superficial glossitis or ichthyosis glossæ, and as has been shown by Messrs. Clarke and Eve this may be the exciting as well as the predisposing cause of epithelioma. Burns of the tongue are very apt to become the centre or starting point of epithelioma ; so also bites repeated at any one spot. Ardent spirits are another cause, especially, as is too often the case, when taken neat. Hot condiments, pepper, chillies, pickles, and the like, are also pungent substances that may well be classed among the irritants of the tongue.

From these we may pass to the constitutional causes that are likely to favour the development of cancer of the tongue. Among these may be classed phthisis, syphilis, and heredity.

Phthisis.—There is no doubt a large percentage of cases of cancer generally, and, therefore, in cancer of the tongue, the patients are at times the subjects of phthisis or have a phthisical history. We cannot, however, look at this as anything more than a coincidence, as undoubtedly, there are a far larger number of people who have a phthisical history that never develop cancer. I am strongly of opinion, however, that if a patient contracted a tubercular ulcer of the tongue, that that ulcer is very likely to take upon itself all the characters of epithelioma, more so, certainly, than a simple ulcer. I would, therefore, in cases of tubercular ulcer, unless it speedily heals under treatment, strongly recommend its early removal. We must not, however, on this account fall into the error, should a malignant growth follow a tubercular ulcer, that the cause of the cancer was in any way connected with the phthisical diathesis of the patient, but merely the result of the irritation of the ulcer upon a debilitated constitution.

Syphilis.—Here, again, we have a specific poison in the system ; and a fairly large percentage of cases suffering from epithelioma of the tongue have a history of syphilis ; but then, on the other hand, as in phthisis, there are a far larger number of people with syphilitic taint who never have any

malignant ulcer of the tongue. So I think here we have no right to say that the syphilitic poison has anything whatever to do with the production of cancer of the tongue. Here, however, as in phthisis, if the tongue is affected with syphilitic ulceration or gummata, there may be a very fruitful source of irritation, which may prove a good soil for the development of cancer.

Heredity.—How far heredity may be a predisposing cause of cancer of the tongue, I am not at present prepared to say, for I do feel, if there is any part of the body in which the local origin of cancer may be expected, it is in the tongue; but I am certainly inclined to think that people with an hereditary tendency, may be, and probably are, more prone to develop cancerous ulcers from local irritations than persons who have no such tendency.

A case which made a very strong impression upon my mind, presented himself to me only a few weeks ago. A man, æt. 60, came with a large epitheliomatous ulcer of his lower lip, with extensive affection of the glands of the neck and submaxillary region. He had the following family history: His father had cancer of the penis, which was amputated, in Bartholomew's Hospital; he died, aged 63, from secondary deposits in his liver and other organs. His mother died of cancer of the uterus. His uncle, on his father's side, died of cancer of the tongue, which was removed at the London Hospital. His aunt, on his father's side, had cancer of the breast, which was amputated, and she died of recurrence and secondary deposits. This is a very extraordinary and exceptional history, but do not exceptions often prove the rule? And I think the most sceptical will hardly say that here was not a case where cancer was distinctly inherited, or that it was a mere coincidence.

Sex.—Epithelial cancer of the tongue is very much more frequent in men than in women; in the 190 cases above referred to, 163, of the cases occurred in men, and only 27 in women, being in the proportion of 7 men to every woman so affected. It may be argued that this is very likely to be the case as men from their habits are much more likely to have their tongues injured or irritated by smoking, drinking

neat spirits, or from syphilitic ulceration, than women, and, therefore, they are much more likely to contract cancer. Such is not the case however, as the disease is found in men who do not smoke and are not addicted to taking spirituous liquors or exceed in any way, while women who are addicted to these habits do not have cancer.

Cancer, moreover, is caused, as has been already said, by the irritation of rough or carious teeth, and it can scarcely be argued that men are more liable to this form of irritation than women.

On comparing the number of cases of women affected with cancer of the tongue, with men similarly attacked, collected from the Case Book at the Cancer Hospital by myself, with those reported by other observers, we find very much the same results as the following table will show :—

Table of cases of Cancer of the Tongue, showing the proportion of men to women, collected by

	Males.	Females.	Total.
Clarke, Fairlie	28	11	39
Von Winiwarter	43	3	46
Barker, Arthur, University College Hospital	55	5	60
Rose	6	5	11
Paget, Sir J.	19	11	30
Morris, Malcolm	48	13	61
Woelfler	48	0	48
The Author, Cancer Hospital	167	23	190
Total	414	693	48

From the above table it will be seen that these observers have collected a total of 293 cases, of which 46 disease were present in women, and the remaining 247 in men; thus giving a per centage of 15.6 women and 84.4 men. This result tallies very closely to that arrived at by myself in the 190 cases collected. In these it will be seen there were 23 women and 167 men affected, giving a per centage of 13.8 women and 86.2 men.

Age, plays, I think, a very prominent part in our diagnosis. If a patient over forty presents himself to our notice with a papillomatous infiltration, no matter how limited, and there is no visible local cause of irritation, we must look with considerable suspicion upon such a nodule, and further, if such a nodule or ulcer does not disappear or diminish in size in the course of a few days or a fortnight, we may be

so certain of its character as to warrant our excising it as speedily as possible. The oldest patient I can find recorded in the Cancer Hospital out of the 190 cases I have collected, is seventy-nine, and the youngest, thirty-two; the average age of the whole number is fifty-two years. In the total of 133 cases collected by Dr. Gross, he found 82 were above fifty years of age, and 51 under that age. The oldest was seventy-eight years of age and the youngest twenty-nine. In 58 cases collected by Mr. Whitehead, the oldest was seventy-six and the youngest thirty.

It would appear then, that epithelioma of the tongue is connected with, or caused by some form of local irritation, and this result may be produced without there being any hereditary taint in the system whatever; but I am strongly of opinion that where there is a family history of cancer, that an individual is much more prone to the disease than one who has no such family taint. It is true that a history of cancer in a family of any given person suffering from epithelioma of the tongue is quite the exception. Herr Von Winiwarter states that inheritance is excluded in almost all his cases, while in those collected by Mr. A. Barker and Mr. Morris family taint is absent in 42 cases, doubtful in 31, and positive in only 4 cases. In the face of this Mr. Barker says "that it would appear as though the occurrence of cancer in the families of those who have the disease in the tongue was little more than a coincidence." I do not, however, altogether agree with him, as a large number of persons who present themselves to our notice know little or nothing of their family history. They do not know what their parents died of. It may therefore be fairly argued that many cases who give no history of cancer in their families may really have such taint.

Physical Characters.—Epithelial cancer of the tongue is met with chiefly under three forms. The one as a soft, watery excrecence; the second as a large, deep, sloughy sore, with jagged, irregular edge, and hard, indurated base; and the third as a firm, hard, dense mass, which contracts the tissues of the tongue together and resembles dense cicatricial tissue. This latter is the form that formerly was confounded with scirrhus.

The disease commences, as a rule, in one or other of the ways to be mentioned, all of which revert, sooner or later, to a common type. In the first, a small nodule forms just beneath the epidermis—never deeply in the tongue substance ; in the second a small fissure or ulcer is the first sign of the disease, which is most difficult to distinguish from a simple ulcer, and still more so *per se* from a syphilitic or tubercular ulcer. In a third, the permanent or papillomatous form, which has no appearance of a malignant growth at first, but which speedily develops into a typical epithelioma. This form is generally on one side of the dorsum of the tongue, very far back. I had a very typical example of this form, which came under my notice some time ago, and which will be found related later on. The last form is very much less frequent and usually associated with ichosiors leucoplakia. It is accompanied by a general rawness of the dorsum of the tongue, with here and there indurated spots. I have only met with one case of this form of epithelioma of the tongue.

The two first forms attack chiefly the top or edges of the tongue, are much more commonly met with, and are more rapid in their progress, and the submaxillary glands become very much more quickly infiltrated with the disease. The two latter are very insidious in their progress, and patients suffering in these ways often go on for some length of time without seeking advice, and when they do so the disease is often not recognised. The lymphatic glands in these forms of disease are not affected until much later.

Thus, in 81 cases, the histories of which I have collected, the lymphatic glands in the neck and submaxillary region have been enlarged in 40 cases, of these 81 cases 16, commenced as warty growths or nodules, 45 as ulcers or cracks, 10 as blisters or papillomatous growths, five as general soreness of surface of tongue, and the remaining five were attributed to injury to the tongue.

Of the five which commenced with a general soreness of tongue the glands were not affected in a single instance, while in the ten attributed to blisters or papillomatous enlargement only in one case were the glands affected, thus fully endorsing the view that epithelioma of the tongue commencing in these

ways, the glands are very much more rarely affected than when the disease commences as a nodule, which speedily breaks down into an ulcer or a fissure.

This view is also endorsed by Mr. A. Barker, whose careful observations we can always so fully rely upon. Thus, he says : "that out of 13 cases in which it is distinctly stated that the glands were not enlarged ; 8 of the ulcers belonged to the large superficial kind, and only three were of the deep variety. And, on the other hand, in 42 cases in which it was noted that the glands were affected, only 11 were of the large shallow variety, while 26 were of the large deep kind, and 5 were small and deep; there being no glandular enlargement with the small shallow ulcers."

The experience of other observers fully endorse these conclusions. We may, therefore, conclude that the deeper the ulcer the more likely are the glands to be affected, and this is very important to bear in mind, as it must guide the surgeon in his advice ; as, undoubtedly the inference to be drawn, is, that whereas we may in the shallow varieties give treatment a good trial without running any very great risk of placing the sufferer in a worse condition than he was, yet, in these cases which present themselves with deep ulcers the sooner they are removed the better it must be. It is only by constantly examining these ulcers that the surgeon is able to diagnose them in their early stage; yet it is of the highest importance that they should be recognised as early as possible and removed.

(To be continued.)

THE POISONOUS EFFECTS OF AMALGAM FILLINGS.

By THOMAS FLETCHER, F.C.S.

The paper of Dr. Talbot on this subject* reads like a paper written fifty years ago. If he had taken the trouble to test his own instructions for mixing he would have found that it is impossible to squeeze mercury out of the mixture. What he mistakes for mercury is a solution of some of the metals which should be left in the alloy, the removal of which almost invariably damages the amalgam. He would also have found that it is simply impossible to squeeze the surplus mercury

*See Brit. Journal of Dental Science, June 1st, page 213.

out of any compound amalgam, the quantity of mercury left in being quite double what is necessary to make a good amalgam. The "bond of union," if the mercury is in proper proportion and not in excess, is most certainly strong enough to prevent evaporation at ordinary temperatures. My own experiments with amalgams in the steam pipe of a high pressure steam engine showed conclusively that there was no loss of weight after three months' exposure; on the contrary, every plug showed a trifling increase in weight owing to surface oxidation.

Dr. Talbot evidently puts all amalgams in the same basket, and believes that all amalgams shrink. If he had ever experimented with precipitated silver he would have been more cautious and more correct in his statements, and as to the question of porosity of plugs, it is quite possible to make either an amalgam or gold plug porous to any extent, as it is also possible to make either material watertight.

Dr. Austin's idea of lining a cavity with tin to take up surplus mercury is simply a makeshift and risky way of getting rid of what never ought to have been put in the amalgam, and the statement of Haswell quoted that "amalgams expand" is simply a proof that his experiments have been very limited and confined to one or two metals only.

The bulging of a filling which Dr. Talbot apparently takes as a proof of shrinkage, he will find has nothing whatever to do with this. If he will make a plug shaped as a true cube he will find it will slowly bulge on all six sides and the corners will draw inwards, showing a strong tendency to assume a globular form. That the amalgam is apparently hard proves nothing. Ice will flow under pressure and the tendency to assume a globular or spheroidal form after hardening varies with every different alloy.

That mercurial poisoning may occur in some cases where plugs are made with the grossest carelessness and an immense excess of uncombined mercury, may be possible, although I have never once, in twenty years' practice seen such a case. But this, even if it does occur is a proof, not that amalgam *per se* is in fault, but that the dentist does not understand the material he is using. Any dentist who puts in a filling saturated with uncombined mercury had better discontinue using all amalgams until his education becomes more complete.

SOME CURIOUS SYMPTOMS FOLLOWING INHALATION OF NITROUS OXIDE.

By HERBERT APPERLY, L.D.S., M.R.C.S., Eng.

A case came recently under my notice which might be interesting not only to the body of the dental profession, but also to pathologists and physiologists generally.

A. B., æt 24, a lieutenant in the army, came to me complaining of toothache in the lower jaw. I found the odontalgia was due to caries in the 1st lower molar, left side. It had reached the pulp which was already suppurating. The patient had orders to leave town so soon afterwards that a second interview with him was impossible. Consequently treatment by extraction was clearly my best course. Gas was administered by the surgeon, and I had no difficulty in performing the operation.

On recovering consciousness he complained of severe pains shooting down both arms and legs and radiating over the areas supplied by both facial nerves. These acute symptoms lasted half an hour, rendering him very prostrate. He continued for two days in this state of exhaustion and though he left England on the 3rd day he was quite unable to attend to his duties for the whole four days following the operation. Six days after the operation he was in his usual health and spirits, not a trace of the pain or prostration existing. He is of a slightly nervous and excitable temperament, has suffered from periodical headaches and occasional attacks of muscular rheumatism. However, he emphatically stated that the severe pains following the administration of the anæsthetic were totally different in their natural character from those which his physician had attributed to rheumatism.

I would then venture to submit the following questions :

Was it due to a rebound or re-action of hyperæsthesia following the temporary anæsthesia ?

Was it a "referred neuralgia" following the rupture of a dental nerve ?

Was it due to hysteria ?

The last suggestion is hardly tenable considering his sex, and the fact that he was well nourished and of a fine physique. He had never experienced such pains before and they ceased

in half-an-hour from the time of their commencement. The second suggestion is not a very feasible one. It is not so localised as "referred neuralgias" generally are.

I feel strongly inclined to adopt the views of those physicians I have addressed on the subject, viz., that the sudden attack of general neuralgia was of the nature of a re-action following the anæsthesia, and consequently, was due to an over-action or over-excitement of those sensory nerves which are in regular use in his every day life, and which the anæsthetic temporarily paralysed.

COMPARATIVE DENTAL PATHOLOGY. INJURIES AND DISEASES OF THE JAWS IN ANIMALS.

By J. BLAND SUTTON, F.R.C.S., Eng., Lecturer on Comparative Anatomy, Middlesex Hospital Medical School.

Continued from page 491.

ATROPHY.

Atrophy of the maxillæ arises from two distinct causes : 1st, as a consequence of fall of the teeth ; 2nd, the constitutional bone disease.

So far as man is concerned, fall of the teeth and atrophy of the jaws is regarded as one of the inevitable consequences of old age, as is wrinkled skin, white hair, or senile cataract. Such conditions in the jaws of animals come under observations very rarely. The teeth of animals are of so much value to them, not merely in cutting and grinding their food, but in the more important matter of seizing and retaining it ; indeed, the existence of many animals may be said to depend on the integrity and effectiveness of their dental armature. If disease attacks the teeth of an animal in its wild state the creature fails to gain a proper supply of nourishment, pines and dies, or, more probably, falls a prey to some rival with stronger jaws and teeth.

The most characteristic example of this rare form of atrophy that has come under my observation was in a kangaroo. The appearance is quite characteristic of the same condition seen in man, and needs no description.

From some unknown reason kangaroos are extremely liable to dental troubles of all kinds—caries, deposits of tartar, pyorrhœa alveolaris, inflamed pulp, alveolar abscess, inflammatory thickenings, and necrosis of the jaws.

In 1847 there died on Lewes racecourse a female ass, aged eighty-five years. She was familiarly known in Brighton as Gipsy Lee. The last owner possessed her thirty years, and he stated that the man from whom he purchased the animal used her thirty-five years. She had no teeth at last, and was obliged to be nursed.

A Himalayan bear died recently after living for fifteen years in the Zoological Gardens. It is interesting to note that the only sound teeth in the mouth are the canines; both the alveoli and the roots of the teeth seem to have undergone absorption. The majority of the teeth that remain are attached to the gums by fibrous tissue, and present in some instances a polypus-like appearance.

The second form of atrophy, that from constitutional bone disease, I do not propose to consider at great length, as this was detailed so recently before this Society in my last communication. It will be sufficient to state that atrophy of the jaws, leading to a premature fall of the teeth, is liable to occur in the course of such diseases as mollities ossium, &c., and has been observed, not only in man, but in monkeys, lemurs, carnivorous mammals, opossums, kangaroos, lizards, and snakes living in confinement.

HYPEROSTOSIS.

About 1745 or 1750 a skull was dug up from a depth of 15 feet in the soil at the village of Sacy, near Rhiems. This skull was presented by a physician of that town to Bernard de Jussieu. In 1799 Jadelot published an account of the specimen, which was remarkable for its great volume, and from the circumstance that the nerve foramina were almost obliterated.

The skull has been examined and carefully re-described by Paul Gervais in the "Journal de Zoologie," 1875.

The most important features in the skull are these:—

The dentition showed it to have belonged to a child aged about five years. All the bones of the cranium and face

have acquired an extraordinary thickness; some of the sutures have suffered obliteration, and the zygomatic arch is enormously thickened.

The nasal orifice is much contracted by bony overgrowth; the posterior nares, antra, and orbits present a similar condition. The lachrymal canal, infra-orbital foramina, and the sphenoidal fissure are almost closed, and the nerve-foramina in the basis cranii have become almost obliterated. The foramen magnum is narrowed, the crista galli and clinoid processes are thick, whilst the foramina in the cribriform plate are not obvious. The nutrient foramina are larger and more numerous than usual.

The walls of the skull vary from an inch to an inch and a quarter in thickness. The maxillæ are very thick, and the alveolar ridges greatly hyperostosed. A detailed account of this remarkable case has been given, for it is a typical example of hyperostosis.

Gervais, in his account of this case, gives reference to numerous cases similar in character recorded by Malpighi, Bojanus. Vrolik, Kilian, and Huschki; the Musée Dupuytren contains some examples; also the Museum of the College of Surgeons, London.

There is one peculiar feature about these skulls which is of some importance, namely, that in the recent state they were in all probability soft, and in the dry state the general thickening and porous condition of the bones will serve as a ready means of distinguishing them from the terrible diseases known as Leontiasis ossea, so named by Virchow. Cases precisely similar to the Sacy skull I have twice seen in monkeys, in whom the hyperostosis of the alveolar ridges was very marked. A third case was reported to me in a living monkey, in whom the distortion was so remarkable that the dealer wanted an absurd sum for the animal, thinking it to be a new species!

The most marked of all the examples of this disease is the one on the table. It is the skull of a sea-lion, *Otaria jubata*, from the Falkland Islands. The specimen is the property of Mr. C. Bartlett, to whom I am indebted for the opportunity of describing it.

The specimen evidently belonged to an adult animal, for all the principal sutures have disappeared.

The first features which attract attention on examining the skull are the extremely porous condition of the bones, and the diminished weight, notwithstanding the increased thickness of the skull bones generally.

It measures from the foramen magnum to the most anterior limit of the premaxillæ 15 inches. Across the base from one zygoma to the other 10 inches. The width of the palate is 5 inches, each alveolar ridge measuring $1\frac{1}{2}$ inches.

On looking at the alveolar ridges it will at once become obvious that there is very considerable hyperostosis, and that many of the teeth sockets are exceedingly shallow. The only teeth present in the skull are one lower canine and two premolars in the upper jaw. This makes the hyperostosis the more remarkable, for as a rule when the teeth fall the alveolar ridges become absorbed, hence the condition of this specimen leads one to suppose that the hyperostosed condition of the alveolus played some part in causing the premature fall of the teeth.

The thickened porous condition of this skull and its general characters declare it to be an example of hyperostosis similar to that seen in the skulls of rickety animals about puberty. It is very interesting in this particular case, for this animal had never lived in captivity.

This specimen induced me to learn what I could concerning other specimens of the skulls of Otariidæ. I found a skull in the Museum of the College of Surgeons which had belonged to an old male with a localised hyperostosis of the lower jaw about the symphysis, but in this specimen there was evidence to lead one to suspect that it was the result of accident. The curious condition of the first skull sheds some important light on a pathological condition of teeth, which at first sight is not apparent.

In the Museum of the Middlesex Hospital there is a skull which I removed from the raccoon-like dog, *Nyctereutes procyonides*, which, in common with the rest of its skeleton, was afflicted with a disease having all the characters of *molli-ties ossium*. In this specimen the teeth had undergone that

peculiar change known as erosion, and many of them had fallen out, the sockets being in part obliterated by overgrowth of bone, porous in character.

(To be continued.)

BRIDGE WORK.*

By Dr. ST. GEORGE ELLIOTT.

Dr. Elliott said the subject of his communication was one which had not as yet been often discussed at meetings like the present. Indeed, it was comparatively a new subject. For although bridge-work was not actually a new invention,—he had himself seen, fifteen years ago, a good example of this kind of work in the mouth of a patient, and it had been in use fifteen years at the time he saw it—yet it was only during the last five or six years that it had come into anything like common use in the profession. Like other methods it might be carried to an extreme, and used without judgment in cases where a plate would have answered much better; still it was very useful in suitable cases. Patients were sometimes met with who had a very strong objection to wearing a plate. Singers, for instance, found a plate very inconvenient; very nervous and irritable patients also not unfrequently objected to them. In such cases “bridging” often afforded a satisfactory means of remedying defects.

It was sometimes asserted that bridge-work was likely to cause trouble, and do harm to the teeth which served as supports, owing to the difficulty of preventing accumulation of food about the parts; but this was a mistake. The work might, and ought, to be done in such a manner that no inconvenience whatever should arise from this cause, and perfect cleanliness could be maintained by the patient with less trouble than where a plate was worn.

He had prepared some diagrams which would illustrate some of the conditions under which this method of treatment might be beneficial. The first case he would mention was that of a German Baron, who was first treated on this plan, about five years ago, by a dentist at Dresden. In this case the right upper lateral and canine had been fastened to the

*Report of a communication made before the Odontological Society of Great Britain.

first bicuspid and central. The bar was attached at one end to the lingual aspect of the central by a gutta-percha filling, and was anchored at the other end to the bicuspid by a gold filling. It was evident that a considerable strain fell upon the central, and it might have been supposed that the gutta-percha stopping would have given way, but it did not. The work lasted two years, and then the lateral broke off from the bar. The patient came to Dr. Elliott in order to have the breakage repaired. He expressed himself as highly satisfied with what had been done, declaring that he had never had any comfort from artificial teeth until he had this bridge in place of a plate which he had previously been wearing. Dr. Elliott removed the piece with some difficulty, replaced the lateral, and refastened it as before to the central, only using gold instead of gutta-percha. This time it only lasted six months, when the central, to which the bar was attached, broke off. Dr. Elliott then cut down the stump of the central to the level of the gum, and attached to it a porcelain crown with a gold backing by means of a screw pin and nut. One end of the bridge was then soldered to the gold backing, and the other carried to the bicuspid and securely anchored to it by amalgam. This had lasted well, and had given great satisfaction to the patient.

Some amount of judgment and experience was required in adapting this method to particular cases. As an illustration of this he would mention a case which had come under his notice. The patient had lost his right upper lateral, and to replace it the dentist had devitalized the canine and inserted a platinum wire in the nerve canal. This wire, after being anchored by gutta-percha, was bent at right angles, and had a lateral soldered to it. No protection was given to the canine other than that afforded by the gutta-percha, so that the tooth soon decayed and gave way, the bar bent under the strain of mastication, and the lateral was forced up into the gum. Dr. Elliott removed the appliance, cut down the canine to near the gum, and fitted on a gold-backed plate tooth, with a hole through the gold for the passage of a screw which was anchored in the stump by amalgam. The lateral was soldered to the pivot thus made, and on the mesial side of the lateral a pin was soldered which passed into a small

cavity already existing in the central, where it was secured by a filling. Subsequent experience proved the value of having the bridge detachable, for after the appliance had been worn for some months the pin in the central gave way; the bridge was then quickly removed by unscrewing the nut, a new pin soldered on, and the apparatus replaced.

Dr. Elliott considered that the attachment of an artificial crown by means of a screw and nut was decidedly the best mode of pivoting for these cases, on account of its being easily detachable in case of accident. This was almost impossible when bridge-work was attached to crowns fitted on the Richmond principle. He found also that it was very difficult to prevent food and mucus accumulating under the overlapping edges of these crowns and leading to bad results. His experience of this method of pivoting dated back some five or six years, the results at first being most discouraging. These failures taught him that in order to obtain satisfactory results he must make his own screws. He found that when he used those sold by the dépôts the nuts come unscrewed and the crowns came off, frequently in two or three weeks. The screws must be much finer than those usually sold, and the nut must be conical and cut half through, so as to make them self-locking. He found also that aluminium, bronze, or German silver were better materials for the screws than platinum, since they became slightly oxidized, and thus held more securely.

To be concluded)

SOME POINTS IN DENTAL DIAGNOSIS.*

By ARTHUR KING, L.D.S., R.C.S., Eng.

(Continued from page 495.)

It sometimes happens that a pulp becomes exposed by the partial absorption of a second molar from pressure on it by the erupting wisdom tooth. The diagnosis here is most difficult. At the best it can but be suspected, and this only by the total exclusion of all other causes of trouble and the absence of the wisdom. Unfortunately, the difficult eruptiou

We much regret that by an oversight, the M.S. of this paper was forwarded without the author's initials being appended and wrong initials were thus allowed to pass uncorrected.—[ED.]

of a wisdom tooth may give exactly the same symptoms as those caused by an inflamed pulp, except the susceptibility to heat and cold. Sometimes it is possible to pass a probe low enough to reach the cavity and feel the wisdom imfrnging on it.

If a pulp remains exposed for some time, and the case is not treated, the nerve may lose its vitality by degrees. This may be suspected to have taken place when all the above symptoms are present, but the pressure on the pleget of cotton wool gives no pain, and the wool on being removed has a peculiar phosphate smell. If a very fine probe is now introduced into the pulp cavity, if any life remains the patient will flinch slightly as the point nears the living tissue, but will not show those signs of distress, such as jumping out of the chair, etc., which he would had you touched a living inflamed, but otherwise healthy nerve. The pulp may be inflamed but not exposed, from injury, etc. It is very difficult to diagnose this from necrosis of the tooth. In both we usually have a history of injury, either direct or from a blow or a stopping in too close proximity of the pulp, or indirect, as the result of fevers, etc.

The local pain from both is much the same, but if neuralgia is present it points strongly to inflamed pulps. In the cases of teeth that have been stopped heat or cold causes considerable pain, and a hot instrument applied to the crown and held for some time, causes great pain if the nerve be living. By inspection we find in both cases more or less inflammation of the gums, much swelling of the surrounding parts, alveolar abscess, or discolouration of the tooth indicates necrosis.

The tooth or teeth affected with either disease are generally loose, and on pressure there is found to be acute periostitis. If we still remain in doubt as to the actual state of affairs, we can clear up our diagnosis by drilling into the pulp cavity. This should be done rapidly that the crown by becoming hot may warn us if there be life in the nerve before entering the pulp cavity.

Regarding pain referred to other parts of the mouth or face than that in which it originates, no definite rules can be laid down that will be of much use in diagnosis.

It may make itself manifest in any of the peripheral branches of the fifth and in some of the seventh or cervical nerves, from any disease of the teeth which has so far spread as to affect their nerve supply, although not necessarily felt at the seat of origin.

Stumps are very favourite seats of referred pain, and when a patient complains of wandering pain in the jaws more or less persistent in the stumps of decayed and broken down teeth, we must be very careful to diagnose the true cause of the pain, as in nine cases out of ten the stumps have nothing to do with causing the pain, it proceeding from some exposed nerve in the same, or opposite jaw. Likewise this pain will often settle in a slightly carious tooth, as seen in the case mentioned in the beginning of this paper, or one that has been stopped. These cases are very misleading, but no difficulty ought to be experienced if we follow out our four rules, unless the original cause of pain be from the formation of secondary dentine in the pulp chambers of apparently sound teeth. This we are very apt to over-look. Our only means of diagnosis in these cases is to remove all other likely causes by careful treatment.

This may also be said of exostosis of the roots of teeth, although we are told that this state of the roots may be rendered visible to the eye by placing a small electric lamp in the mouth. The light penetrating the jaw but not the exostosed roots.

Neuralgia about the eye, forehead or temples generally indicates mischief in the upper, and pain passing backwards into and behind the ear and temple, mischief in the lower jaw.

Again, taking the upper jaw, we find that referred pain from the central, lateral, canine, and first bicuspid, is usually felt in the locality of the infra-orbital foramen, whilst that from the second bicuspid and three molars affects the temporal and supra-orbital regions.

In the lower jaw the referred pain from a wisdom is often felt in the bicuspids in the same side of the same jaw, or at the mental foramen. Pain down the neck, shoulders, and arms is particularly characteristic of trouble in the lower jaw, and points especially to the wisdom. But as I said before,

none of these symptoms are reliable by themselves and must only be employed to strengthen or confirm our suspicions.

Immediately after the death of a pulp there is sometimes an interval of from a few days to many years before any symptoms develope themselves. This fact is often valuable in diagnosis, thus, a patient telling you that a few months since he had violent aching pain in a faulty tooth accompanied by neuralgia, which lasted some time and then passed off, and giving you some of the symptoms to be hereafter related, proves to you that at the first attack the pulp was inflamed, and probably died, and that now the periosteum is affected.

(To be concluded.)

DISCUSSION UPON MR. BLAND SUTTON'S PAPER "ON DISEASES AND INJURIES OF THE JAWS IN ANIMALS."*

(Concluded from page 498.)

Mr. Turner said he felt bound to protest on behalf of civilization. He agreed with Mr. Sutton that civilization was blamed for a great deal that could not justly be laid to its charge ; in fact, most of the troubles for which it was said to be answerable should rather be attributed to the want of it. Perfect civilization was the highest development of man, mentally, morally, and physically, and it should not be blamed for all the evils brought about by the influences of fashion and habit. The majority of these evils, diseases of the teeth amongst them, were due rather to want of common sense than to civilization.

* Read before the Odontological Society of Great Britain.

The President said the time had arrived for closing the discussion, and he must call upon the author of the paper for his reply. He should be glad to know if it had really been proved by observation that the cartilage islands did develop into exostoses, or whether this was only a matter of theory or inference.

Mr. Sutton remarked that writing a paper was a simple matter compared with the task of briefly answering the long list of questions and criticisms which had been addressed to him. Careful observations were daily confirming the fact which he had stated, viz., that all animals, both small and great, from the water-flea to the elephant, were liable to disease. The connection between tartar and Riggs' Disease, whether it was a cause or result of the disease, was, he knew, a moot point ; but it was at all events interesting to find that animals suffered from a disease very similar to that which was met with in man, and known as pyorrhœa alveolaris. Hyperostosis was not a very rare disease, but he was sorry to hear that Mr. Weiss had been unable to follow up the history of his case.

With reference to the connection between "cartilage islands" and exostoses, it was, of course, impossible actually to demonstrate the fact in any given case, but at the same time the fact that these cartilage islands were so frequently found in certain situations, and that exostoses also occurred in the same situations, appeared to him quite sufficient proof of a connection between the two ; just as people in general connect thunder with lightning. Mr. Canton's exostoses on the inner side of the lower jaw no doubt owed its origin to a remnant of Meckel's cartilage, which occupied that situation during a portion of fœtal life. He knew that it was a common practice to speak of every over-growth of bone as an exostosis, but this was not strictly correct. He thought that the prominence mentioned by Mr. Hutchinson was probably an overgrowth due to inflammation of the periostium, and not a true exostosis. His definition of a tumour was that it was a new formation having a structure different from the tissue in which it grew, and having a tendency to increase ; according to this, the mass of cementum surrounding the agouti's tooth was strictly a tumour.

He was sorry that he had not made his views on the subject of erosion, the connection between soft and bony tumours of the jaw, &c., quite clear to some of his hearers, but to explain these again at length would occupy more time than could be allowed him at that hour of the evening. He hoped, however, that a careful perusal of his paper when published would clear up most of these doubts and misconceptions. He had great pleasure in offering for the acceptance of the Society the specimens which he had exhibited to illustrate his paper, with the exception of the skull of the sea-lion, which did not belong to him.

The President then proposed a vote of thanks to Mr. Sutton for his paper, and for his valuable donations to the Museum, and also to Mr. Pedley, Mr. Henri Weiss, and other contributors of specimens, &c., which was carried with much applause.

He then announced that at the next meeting (May 4th) Dr. St. George Elliott would read a paper on "Bridge-work," and some interesting communications had been promised by Mr. Dunn, of Florence, Mr. W. A. Hunt, and others.

Dr. George Field showed, after the meeting, an electric dental engine and Battery. The electric engine was an improvement on one which he showed some months ago, being lighter and more compact; it weighed $10\frac{1}{2}$ oz. The handpiece had a universal chuck; it made very little noise when in use.

The battery used by Dr. Field, both for the engine and the electric mallet, was one supplied by Messrs. Coxeter & Nehmer, spoken of about six months ago by Mr. Walter Coffin, at one of the Society's meetings. The carbons were two feet in length and three inches in diameter, giving a current of large quantity and very high electro-motive force. The cells might be placed in any part of the house, at a distance from the operating room, without there being any appreciable loss of strength; though as there were no acids used and no fumes evolved, the battery might be placed in the operating room if convenient. One advantage of this form of battery was that it would do a very large amount of work without re-charging. Used on an average for five hours a day, it

would work satisfactorily for six or seven weeks without re-charging, and if only occasionally used would go on for three months without attention. That shown by Dr. Field consisted of twelve cells, and by means of a shunt either half could be used, or the whole number.

Dr. Walker also sent for exhibition an 8-celled Leclanché battery, made by the Indiarubber and Gutta-percha Company of 106, Cannon Street. It was contained in four oblong boxes, each box being divided into two cells. Each cell was lined with zinc plates, and contained six carbon blocks, surrounded by four agglomerate pillars. The arrangement of the cells and connections was such as to afford the greatest motive power at the least expense to the battery. This could be maintained at full power for 100 hours. When the current became weak, the carbon blocks and agglomerate pillars must be detached, brushed with a hard brush and placed in fresh solution, when the power would be completely regained.

The commutator shown with the battery was a new instrument with nine platina attachments. With the arrow of the index at 0, the battery is at rest; when pointing to 4, four cells are engaged; and by moving it on, 6, 7, or 8 cells would be brought into circuit. The cost of battery and commutator was £17 12s. 6d.

Reflections from the Surgery.

A CASE ILLUSTRATING THE OCCASIONAL EFFECTS OF NITROUS OXIDE GAS.

By Dr. S. KIRK, D.D.S., and reported in the *Ohio State Journal of Dental Science*.

On Saturday, December 20th, at 2 p.m., Miss M. L——, æt 19, native, medium size, fair complexion, nervous sanguine temperament, apparently in good health, came into my office for the purpose of having the roots of a molar tooth removed, and decidedly wishing to take “something.” I examined her in regard to circulation and breathing, and found her a good subject, and directed her to undo her corset, while I called a physician, who also pronounced her all right. I administered

the gas and removed the roots without any unusual symptoms, she recovering perfectly within two minutes, with the single exception of a headache, from which she said she had been suffering severely for several days.

She remained in the office until 4.30, while her friend was attending to other business, for two hours well, but the last half-hour quite nervous. I directed her to be taken to a hotel, where she could rest until the midnight train, on which they were to leave, should go.

About 6 p.m., a messenger came for me, saying she was in convulsions. I immediately went to see her, taking with me a physician. We found her with well-marked hysterical convulsions, every muscle contracted, her grip like a vice, teeth set firmly, every few minutes choking, which would result in coughing and throwing up blood, which all of us thought was from her lungs. Happily, I soon thought to make an examination of her mouth, and found blood issuing from the socket of the extracted tooth, in quantity amply sufficient to account for all she was throwing up. I called the attention of the physician to this fact, and we at once laid aside all fear in that direction. Her lungs subsequently showed no signs of having suffered from hemorrhage.

She lay till the following Tuesday morning, with only short intervals of relief from the muscular contraction, nearly all the time partially unconscious, visionary, calling for and holding conversation with her mother, who had been dead for years, calling also for her lover, whose arrival had a decidedly salutary effect, from which time she grew better, and was able to sit up in a week, and was discharged by her physician a few days later. At no time during her sickness was there any elevation of her temperature, or acceleration of her pulse.

No less than five competent physicians examined her, and all agreed in saying that her case was plainly hysteria.

Now as to the cause: She had lately left home on account of opposition to the above mentioned lover, and that caused her much trouble. She had been suffering for some time with menstrual irregularities, a period being upon her at the time of the operation. She had been suffering about two weeks with severe toothache, losing much sleep. Three or

four days previously her dress accidentally caught fire, and partially burned off her, causing fright and severe shock to the nervous system. The day previous, the tooth had been broken off, leaving the pulp bare, from which she suffered so much that she walked the floor all night. The bleeding, which no power could make her believe did not come from her lungs, coupled with the fact that her mother and other relatives had died with consumption, her constant worry about the expense (being a poor girl), all combined, with a probable tendency to hysteria, to place her in the position she was in.

The same journal records the following interesting case :

A FIRROUS TUMOUR FROM AN ACCIDENT.

By P. N. BARKER.

George M——, a young man of this place, came into the office, last July, saying something was the matter with his mouth, what, he was unable to say. Now could his dentist give him any light on the matter?

Diagnosed ; Fibrous tumour, having its origin in the peridentium. It occupied the space between the second and third superior molars, of the left side, extending out a considerable distance on the hard palate. The third molar was very loose, and could be moved posteriorly the width of its crown. It was so loose as to interfere with mastication.

Both teeth were removed, and then it was very apparent that the beginning of the growth was at the apex of the palatal root of the second molar, afterwards involving the remaining roots.

The history, as near as I can ascertain, is this : Some five months previous to his coming to the office, he fell from his bicycle (i.e. took a header) striking on the side of his head and left shoulder. The fall was a severe one, as he was unconscious for several hours. He noticed the next day that the upper teeth on the *left* side were *very sore*, but the soreness soon passed away. About eight or nine weeks after, while picking his teeth, he discovered a small growth, which bled profusely after being touched. After it became so large as to interfere with mastication, his dentist *cut it off* even with the surface of the gum. In a short time it was larger than ever, and the case came to this office. When the tumour was removed it was about the size of a large filbert.

The cause was evidently the forcible striking of the jaws together.

British Journal of Dental Science.

LONDON, JUNE 15, 1885.

THE RETENTION OF DEAD TEETH IN THE JAWS

IN these days of conservative surgery we meet with the survival of members whose fate would have been demolition but a few years ago. From the domains of the general surgeon to that of the specialist the same rules of practice lead to the same results, and so on all hands one finds infinite pains taken to preserve what our fathers thought was useless. We are now pretty well agreed that the new order of things is the better ; that to save a leg even though hampered by a stiff knee-joint, is a greater achievement than to lop it off and replace it by a pin. In the same manner the exponents of conservative dentistry do not hesitate to assure us that although pulpless, a tooth is a tooth and so competent, if efficiently treated, to carry on its due work in the organism. But although it should be admitted by all thoughtful men that the practice of conservative dentistry is, upon the whole, based upon sound theory and supported by equally reliable practice, yet it is our duty to enter a demurrer against the too ready adoption of such a course in all cases. And here we would guard ourselves against a possible misconception. The demurrer holds good only as against the *abuse* and not the *use* of conservative dentistry. The more refined become the manipulations of any art, the greater are the dangers lest some of the details should be scamped. A very small flaw will utterly mar the fairest etching, and in a similar manner those who strive after a high standard in other handicraft must run the risk of doing much damage by a slight slip—a small error of judgment. It daily happens that one hears of Mr. So-and-so censuring very severely the conduct of Mr. Somebody else, because the latter adopted a line of practice not consonant with the former's cut-and-dried rules of practice. In dentistry, while in the one case a patient is said to have had teeth ruthlessly dragged from his jaws, when no such mutilation was called for ; in another, an outcry is loudly raised that a dead and useless tooth has

been allowed to go on infecting the mouth and tormenting the owner when its early removal would have saved all the pain, and, possibly, the agonies of a periostitis or worse. It is an old story to say, surely a middle course is the safest. Yet, old and trite as is the saw, it nevertheless represents the truth in this case. The early extraction, the tardy effort for preservation, are each in their way right and honest. But mark the saving clause—right in each, but in cases which experience and tact can alone adjudicate. In a Transatlantic journal the question whether it is justifiable to leave dead teeth in the mouth, has been dealt with from a wholly superficial, and, therefore, inaccurate standpoint, and hence one is not surprised to find a negative response arrived at. The real question has many side issues, and none but those technically trained can hope to reach any definite conclusion with regard to the main contention. In discussing the matter, the Odontological Society of New York, very rightly reprobated any hasty and partisan method of dealing with it. It is beset with a very forest of fallacies. While one expert uses the expression, “dead teeth,” as meaning a tooth in which the pulp is destroyed by disease, another seems to consider it as interchangeable with a tooth which has lost its physiological connexions with neighbouring structures. None would deny that were a test made of a tooth whose pulp was diseased beyond redemption, imperfectly cleansed, and subsequently filled, that its retention in the mouth must be an unmixed evil. It is mere waste of time to discuss it. Now, however, how different is the case when a tooth whose pulp is wholly destroyed by morbid processes, lends itself to skilled hands. Thorough cleansing, perfect drainage, are certainly in a vast majority of instances, possible, and, as a result, a cavity, which, when properly filled, replaces the tooth into the category of physiological structures. How far, in the first place, a dentist can trust himself to rely upon his diagnosis, must depend upon his antecedent experience. And secondly, the responsibility of ability to successfully excavate, anti-septicise, and subsequently fill, must rest with each practitioner. It is a responsibility from which he cannot retire. If there creeps in any flaw the operator must but realise that he is

culpably deficient in theory or practice, and that by his act, his patient not only loses a tooth, but runs an extreme risk in the spread of mischief beyond the original circumscribed lesion. It is very well to decry wholesale tooth-drawing, but let us remember that many of the offenders are those whose efforts at conservative dentistry, were such attempted, would unquestionably lead to results at least as mischievous as the loss of a diseased tooth. Their ignorance of modern methods and lack of dexterity is deplorable. Still, while they exist, it is not wholly to the interests of those who seek such practitioners that they should be forced into a bad mimicry of modes of procedure which, unless skilfully carried out are certainly productive of great evils.

CURE FOR SO-CALLED "RIGG'S" DISEASE.—Dr. Robinson, an American dentist, has proposed a remedy which consists of, caustic potash, carbolic acid in crystal, equal parts. This compound, which needs the addition of water to be formed into a paste is reputed to be a good and efficient cure. As we need hardly point out it forms a strong caustic and as such must be used with the utmost caution, and only by those who can watch the effect and so check any unpleasant consequence. The method used is to dip some threads in the mixture and coil them about the tooth which is affected, at the same time forcing the threads into any pockets which may exist between the gum and the teeth.

THE CAUSE OF SCARRING ON THE PALATAL SURFACE OF VULCANITE PLATES.—These scars are due, it is said, to the employment of the *moist* process in packing. Mr. Magill, of Rhode Island, U.S., believes they arise from the formation of steam. This assertion he bases upon a simple experiment. The placing of a few drops of water under the rubber would ensure numerous indents. He says that since he has adopted dry packing he has had no troubling from scarring.

MEDICO-LEGAL IDENTIFICATION BY DENTAL WORK.—For those who are not already aware of the following instance of this we cite it. The late Prince Imperial had been so much disfigured that identification would have been extremely

difficult but that the Prince had had for small cavities in the first molar teeth filled with gold by Dr. Rottenstein, of Paris, and had met with a slight accident in April 1876, from a blow on the front teeth, which had made it necessary to fill the teeth a little in order to smooth the enamel. These constituted signs which are unalterable even by ages; and, as careful dentists keep usually a record of such operations, they afford a means of identification which is unerring, and which, as in the present instance, was of great value, and might, under certain circumstances, be of the highest importance.

CORRECTION OF ERRORS OF ARTICULATION IN ARTIFICIAL DENTINE.—A San Francisco dentist, Mr. Stewart Spence, recommends that a sheet of base-plate wax be doubled, and after being warmed be inserted in the mouth, the bite being then taken. The plate and wax are then taken from the mouth and cemented together. It is then directed that plaster be poured over the other side, of the wax sheet and the whole be set up in the articulation. When the plaster has set the wax is removed, and any grinding that is necessary is then proceeded with. This method ensures more accurate results than most others.

CANNABIS INDICA.—Dr. Harlan writes: For a very short period I have been experimenting with the tincture of Cannabis indica of the strength of ten ounces of the tops of the plant to alcohol one pint. So far I have succeeded in removing one pulp after a saturation of it for five minutes. I have also excavated several cavities, very sensitive, by using the tincture as above, The pain of cutting seemed to be less intense, and did not produce much discomfort to the patient. I allow it to remain in the cavity for several minutes and then proceed as usual. I call attention to it at this time only to induce others to experiment in the same direction.

WE AGAIN draw attention to the anæsthetic value of Cannabis indica, as from the frequent reference to the use of this drug as if its use were a novelty we believe its merits are as yet not so widely known as they deserve although we have long ago had them pointed out in our pages by Mr. Aaronson.

REFERRING TO the International Medical Congress to be held at Washington next year *The Journal of the British Dental Association* says: "There is to be a Section for Diseases of the Teeth (which is not yet actually settled, though we believe it is scarcely in doubt), and also that all who hold the degrees D.D.S., D.M.D., M.D.S., etc., will be eligible as members. Now, as the arrangements are being carried out under the auspices of the American Medical Association and as this body recognises none but medical degrees, a special grace will be required to allow of the admission of those holding only dental diplomas, and we understand that such a proposal will not improbably meet with some, perhaps a good deal of opposition. Hence, it is scarcely safe to take the point as gained."

SUIT AGAINST A DENTIST.—A San Francisco dentist, according to the *Medical Times*, brought upon himself a heavy suit for damages in the following way. He agreed with a patient to fill her teeth for three pounds ten, but demanded a sovereign more upon completion of the work, and when she declined to pay that amount, forcibly removed the fillings. Suit was brought against him for damages, and the jury awarded a verdict of over fifty pounds besides costs of the suit.

AMAUROSIS FROM DENTAL IRRITATION.—A correspondent of the *Cosmos* writes: "I furnish the history of a case,—or rather, a chapter in that history,—which is that of a lady whose left eye had given her so much trouble for three years as to lead her to conclude that its days of usefulness were ended. Oculists had vainly sought to remedy the trouble. In five days, however, from the date of the extraction of a defective upper molar and bicuspid on that side, the eye was as well as the other one." This case reminds one of the very striking paper by Mr. Henry Powell, read before the Odontological Society of Great Britain, and which appeared in our pages last year.

Abstracts of British & Foreign Journals

THE INDEPENDENT PRACTITIONER.

BIOLOGICAL STUDIES ON THE FUNGI OF THE HUMAN MOUTH.

By Professor Dr. W. D. MILLER, Berlin.

Investigations into the origin of dental caries have, until lately, been purely speculative, and even now are almost solely clinical. They have led to the promulgations of the most diverse theories, such as worms, acids, inflammation, electricity, infusoria, bacteria, putrefaction, toxic agents, etc., etc., as causes or conditions of *caries dentium*.

1. The observation of Leber and Rottenstein that micro-organisms are constantly present in decaying dentine, has been confirmed. (Weil, Milles, Underwood, Miller.)

2. The softening of dentine in caries has been shown to be chemically identical with that produced by certain weak organic acids. (Miller, Jeserich, Bennefeld.)

3. It has been established that various organisms found in the human mouth, produce the decalcifying acid by first converting non-fermentable sugars into fermentable varieties, and secondly, by splitting fermentable sugars into lactic acid. (Miller, Hueppe.)

4. The same organisms have been found capable of dissolving decalcified dentine, while they have no apparent effect, even after two or three years, on sound dentine. (Miller.)

5. Caries of dentine, chemically and morphologically identical with natural caries, has been produced outside of the mouth. (Miller.)

6. Certain of the organisms of the human mouth are capable of developing under exclusion of air, thus enabling them to propagate within the substance of the dentine. (Miller, Hueppe.)

Dr. Miller sets himself to narrate experiments explanatory of the morphology of mouth fungi.

Describing his methods from a solution densely impregnated with micro-organisms, a bead (on a loop of sterilized platinum wire) of the solution is placed in a tube containing

sterilised gelatin (first dilution). From this two or three beads are added to a second tube (second dilution), and from this five or six beads to a third tube (third dilution). The gelatine is then poured upon horizontally placed, sterilized, cold glass plates. On congealation the three plates are placed in a pile (on glass benches) in a moist cell. Then examined after twenty-four to thirty-six hours, under a microscope (100 diam).

For fungi which do not grow on gelatine, Agar-Agar, or congealed blood serum, should be used. There are thus found few colonies of various forms of micro-organisms on the third plate which are distinguished under the microscope, and further cultivations made from each colony in a similar manner as gelatine.

Agar-Agar 1 to 1.5% has a higher melting point than gelatine, ten per cent, and is solid at the temperature of the blood. When used, it must be melted in hot water, infection being made at 40° to 42° C. Below this temperature it solidifies; above it, the germs suffer. Congealed blood serum is prepared in test tubes so inclined as to give the greatest possible surface, and a minimum quantity of the fungi or fungus spread over the surface. A pure culture of any fungus obtained, the points to be determined are:

1. Its morphology (bacillus, spirillum, micrococcus).
2. Is it moveable? Does it produce spores?
3. What are its growth-characteristics on various media, microscopically and to the naked eye?
4. What are its relations to oxygen?
5. Does it produce fermentation? If so, what fermentation, under what conditions, and with or without development of gas?
6. Does it cause putrefaction?
7. Does it have a diastatic, inverting, or peptonizing action?
8. Has it a pathogenic character?
9. Does it produce colouring matter?
10. What is its susceptibility to the action of the various antiseptics?

1 and 2 are settled by the microscope alone; 3, by the

microscope and naked eye ; 4, by placing a thin strip of mica upon one half of the culture-plate before the gelatine solidifies. The mica, by excluding the air, prevents access of oxygen, and if the fungus needs oxygen for its growth, it kills the fungus. 5, by infecting fermentable solutions with the fungus in question ; 6, by analogous methods ; 7, by the action of the fungi upon starch, cane sugar, boiled white of egg ; 8, by experiments on animals ; 9, by the appearance of colour or not in the fingers, or surrounding medium ; 10, by experiments direct with the agents. In the study of Schizomycetes, boiled potato is a useful medium. Any sound potato *which does not become mealy or crack open on boiling*, will do. First, thoroughly wash and brush, and remove all defective spots and deep eyes, place for one hour in a corrosive sublimate solution (5 in 1000), then in the steam sterilizer for $\frac{1}{2}$ to 1 hour. The sterilized moist cell, is lined with filter paper wet with sublimate solution (5 in 1000). The hot potatoes removed from the sterilizer with sterilized forceps bisected with a cold sterilized knife, are placed directly upon the sublimate paper (the cut surface up), and the cell closed. Such sections should remain unchanged indefinitely. The potato, when cool, has some fungus spread over cut the surface. Fungi apparently morphologically, and in cultivation on gelatine, Agar-Agar, and blood serum, appear the same, may sometimes be distinguished by potato culture. Potato cultures are used not to separate fungi (pure cultures), but to develop previously prepared pure cultures.

Eggs may be used. The *fresh* egg is placed in sublimate (5 to 1000), for ten minutes, in the steam sterilizer for one hour. The cell for eggs is prepared as for potatoes, except that a sterilized glass plate, resting on a glass bench, is placed in the bottom to support the egg sections. The hands, before touching the egg must be sterilized with sublimate, and then absolute alcohol. The eggs are shelled while hot and cut up. The white is then inoculated.

(To be continued.)

DENTAL COSMOS.**PYORRHŒA ALVEOLARIS.**

By A. O. RAWLS, D.D.S., Lexington, Ky.

The writer firstly reviews the various theories concerning the disease. The views are that its origin is due mainly or solely to salivary calculus and therefore local. Others claim that sanguinary calculus is the real cause, while some the fungoid growths fill the pockets and originate the disease.

Riggs held the local theory, referring the disease solely to salivary concretions. Dr. Ingersoll, while remarking that salivary calculus may be absent, asserts that sanguinary concretions in such cases replaces it and extends far up the roots. Drs. Black and Witzel narrate they found fungi about the teeth which lead to a melting down of the pericemental membrane.

Pyorrhœa progresses variously according to its origin and environment. Incipient symptoms are seldom noted. One which is often seen when looked for in a red line along the border of the gum. Subjective feelings of fulness are present; then ensues soreness. This soreness lessens as the disease advances. After a time the lesions become subject to irritation of deposited irritants, and so suffer exacerbations in proportion as the irritants are removed by clearing or allowed to remain. A slight prominence or thickening occurs about the affected gum but no calcareous matter is yet found. Then follows a red or purplish tint, due, it is said, to congestion; this as the tissues of the gum break off give place to an angry red appearance. Now is found a dissolution of continuity between the teeth and the gums. Irritating matters become deposited, and by their further action the periosteum between the teeth becomes exposed and inflamed. The periodontal membrane becomes destroyed from above down, due to the cutting off of its blood supply. Many of those symptoms are, however, absent. The point at which the disease starts is usually where the greater amount of gum tissue exists with the least external contact or exercise, and this obtains about the opening of the ducts of the salivary glands. Also where peculiarly shaped or irregularly placed teeth, such as molars or bicuspid have been pressed forward or pushed backward and out of position, and broad, square-crowned molars and bicuspid with narrow necks, showing depressions, out-standing lateral incisors, broad-cutting edges and narrow necks of incisors offer starting points. When the alveolar ridge is then from before back the disease advances directly

towards the root. Where the septum is thin the tenacity for life is great; when the alveolar process is large and thick the disease travels superficially rather than towards the root; the gums dropping over the borders of the alveolar plates. The progress of the disease is more rapid when the general health is depressed, lessened by general and local hygiene. Tobacco is said to lessen its ravages; mercury and common salt are inciting causes. The majority of cases occur after middle life when due to acquired conditions, hereditary cases appear much earlier and as in these cases the malady is more obstinate. Under the head of treatment we are told that the mere removal of calcareous deposits is insufficient, but is an essential commencement. To do this thoroughly it is recommended to slit the gum in front and behind and to syringe well with tepid water. An antiseptic can then be used; Dr. Rawls prefers blistering. All lifeless and disintegrated bone is then removed, an ordinary scaler being used. The patient is then instructed to keep his teeth scrupulously cleansed from food. He is to rub and press the gum with thumb and finger, pressing towards the seat whence the dead bone was removed. After the soreness of the parts has passed away the use of chewing gum is commended, its use insuring due exercise and so producing a physiological blood supply.

Literary Notices and Selections.

A DISCUSSION OF SOME QUESTIONS IN DENTAL CARIES.

By W. D. MILLER, Berlin, Germany.

(Continued from page 535)

The Springfield school of "logicians," a short time ago, would hear of nothing but putrefaction, while the combined results of all the experimenters and observers of the world plainly told them that no one ever did or ever could produce caries by putrefaction alone. So "S." hypothecates the existence of a particular toxic agent, and, having done that, he hypothecates to his agent the power of softening dentine, while no one has ever detected the agent, much less produced caries by its action.

I have shown that the fungi of dental caries produce, first an inverting ferment, and secondly an acid-producing ferment,

and thirdly (by experiments soon to be published) a peptonising ferment. I have furthermore shown that there is a fungus in the human mouth, which when injected into the blood-vessels of smaller animals, produces blood-poisoning, demonstrating that it does, no doubt, produce a toxic agent, but this certainly would not justify the inference that all or any of the fungi of caries produce toxic agents, or that such agents have any effect upon sound dentine.

With regard to the digestive fluid, the avidity with which the mention of it is seized reminds us of the Bourgeois gentilhomme: "What! when I say, 'Nicole, bring me my slippers and give me my night-cap,' is that prose? Upon my honour, I have been talking prose these forty years, and have not known it." Toxic agents! Digestive fluid! they exclaim; we never heard of them before; they must be the cause of dental caries. It does not matter whether any of the fungi of dental caries really produce toxic agents or not, or whether if they did, tooth-bone would be affected by them; here is something (old) which to us is new; here must be the explanation of all caries. They even go so far as to speak of *Dr. Black's* digestive fluid. Dr. Black certainly does not claim to be the first to detect the existence of such an agent. Will some one please name an organism with a digestive fluid (not acid) sufficiently strong to digest dentine or enamel not previously calcified?

When we know that we have so many micro-organisms in the human mouth, and know that many of them are continually producing acids there, and know that this acid very readily attacks and softens dentine (or enamel), and know that they are capable of dissolving the softened dentine, then why not hold fast that we *know*, instead of rushing headlong after something that we know nothing about?

It would seem as though certain of my contemporaries had consecrated themselves to the sole object of putting everything possible in the way of a clear understanding of the subject, of distorting and confusing the simplest observations, and substituting for them anything that can be seized upon, utterly regardless of its complete incoherence.

It is not very long since the view was strenuously advocated in the *New England Journal*, that caries does not begin until

putrefaction of some portion of the organic matter sets in. Now, Mayr tells us that "caries comprises only that small diseased layer, probably not over one-one-hundredth inch thick, that was sensitive." It would be difficult to say which of these views has less foundation in fact. The absurdity of making sensitiveness the test of caries must be at once apparent to every practitioner, even if we do not take into account pulpless and dead teeth. Equally non-accordant with the most simple facts of histology is the comparison of the mass of carious dentine to a scab; there is not the slightest analogy between the two, nor is there between pus and the outer layers of carious dentine. Such misleading terms should be scrupulously avoided. It is very plausible to make a theory of dental caries, and then frame a definition of caries which will conform to the theory; it does everything else, however, more than it advances the cause which it pretends to serve.

It has been, furthermore, persistently asserted in the *New England Journal*, that in that portion of the softened dentine bordering on the normal the lime salts are present in normal proportions, whereas analyses of this layer, made by Dr. Jeserech, and by myself, have shown a very considerable reduction in the proportion of lime salts. (See *Cosmos* 1883, p. 342.) As I pointed out in the article just referred to, the analyses on which this assertion is based having been undertaken with one milligram of carious dentine, were necessarily completely unreliable, as every dentist in the United States may find out by enquiring of any competent authority in chemistry. Since my connection with the Dental Institute, I have had abundant opportunity to secure the material necessary for carrying out these analyses, and the result has completely confirmed the previous work.

From about one hundred and fifty teeth, I chose thirty of those best adapted, removed all the outer, very soft dentine, and took for the purpose of analysis only a very thin layer on the border of the normal dentine. The instrument grated on the hard dentine, and the almost or completely colourless dentine came off in little chips, great care being taken that no trace of enamel should get mixed in with the dentine. The analysis made by Dr. Jeserich, a sworn chemist, the highest authority here, gave sixty per cent. of lime salts, while a similar analysis made by myself gave sixty-one per cent. As the amount of dentine used in the determinations was in each case above 75 mg. and the analyses were made with great care, it may be safely said that the error of experiment fell

within one and one-half to two per cent. at the outermost. Herr Bennefeld (*Correspondenz Blatt für Zahnärzte*, Jan., 1885) found in an analysis of over 100 mg., obtained from about fifty teeth, sixty and four-tenths per cent. of lime salts. These results indicate the exhaustion of over one-third of the lime-salts. Were it true that the softening of the dentine on the border line is produced by a destruction of the organic matter, these analyses should show an *increase* in the percentage of lime salts, a result which no one has ventured to publish, and how, in the face of this fact, any school of *philosophers* could persistently adhere to and promulgate such a doctrine, is more than I can understand. If this be logic, then let us "throw" logic "to the dogs." Moreover, the necessary experiments have not yet been made to prove that those who make such a parade of logic know anything more about it than the lookers-on.

To be continued.

Dental News.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

ORDINARY MONTHLY MEETING, May 4th, 1885.

Richard White, L.D.S., Eng., Vice-President, in the Chair.

The Minutes of the previous meeting having been read and confirmed,

Mr. William Penfold signed the Obligation Book, and was formally admitted to membership.

Mr. Edward Latchmore, L.D.S., Eng., of 21, Upper Baker Street, Regent's Park, was balloted for and elected a Resident Member of the Society.

Mr. S. J. Hutchinson announced that he had received from Mr. Oakley Coles some pieces of hippopotamus ivory studded with curious masses of secondary dentine. He had not yet had an opportunity of making sections and examining the specimens carefully, and would not venture to give any explanation of their nature until he had done so.

Mr. E. Lloyd Williams exhibited a model of the upper jaw of a lady, aged sixty, showing a large mass of hypertrophied gum tissue attached to the palate by a large, flat pedicle.

The occurrence of such growths in connection with the wearing of plates was not uncommon, and this one was remarkable only on account of its size. The patient had worn a plate, retained by springs, for fifteen years.

Mr. Charters White remarked that such growths were often met with in patients who had been wearing for some time a misfitting plate. In this case the edge of the plate had evidently cut into and irritated the mucous membrane of the palate. He thought the best plan would be to make a plate to cover the whole of the palate, the pressure of which would soon cause the disappearance of the mass.

Mr. Browne-Mason (Exeter) exhibited models of the mouth of a girl, aged eleven, showing a remarkable malformation of the jaws. The upper jaw receded so that the incisors closed a quarter of an inch within the lower, and the only teeth which articulated properly were the first permanent molars on the right side. He should be very glad to receive any suggestions as to treatment, though he feared the case was incurable.

He also handed round a model which he had received from Mr. Parkinson, of Bath, showing unusually large and well-formed supernumerary laterals.

Mr. W. A. Hunt (Yeovil) read the following notes of an instructive case of Neuralgia coincident with the advent of the wisdom teeth :—

“A lady vocalist, some three years ago, suffered greatly from ordinary neuralgic pains on the right side of the head, affecting all three divisions of the fifth nerve, with pain apparently located in the first right lower molar. An irregular practitioner extracted this tooth, which he said was sound, but the patient experienced little benefit. Under the hands of her medical attendant, after a six months' course of quinine, etc., the pain did, however, slowly abate, but only to return as badly as ever on the *left* side.

“She then consulted me, but, she said, with little hope of obtaining relief. Her age was twenty-eight, and her general appearance healthy, but the pain made her miserable. Her teeth were all well formed and regular, but seemed firmly compressed against each other. The right lower wisdom

tooth only had been erupted, and on this side the first lower permanent molar had been extracted, as already mentioned.

"The advancing wisdom tooth must, I thought, have been the cause of her pain, and had the second molar been extracted instead of the first, relief would have followed almost at once, instead of taking nearly six months and the expenditure of so much medical skill and quinine. I therefore examined the left side carefully, and by passing a fine probe through a little dimple in the gum, I felt the wisdom tooth beneath. I at once removed the second molar under gas ; some relief was at once experienced. I advised her to discontinue all medical treatment, and in two or three days the pain entirely subsided.

"A year elapsed and she again consulted me with the same kind of symptoms on the *right* side. Here I could see a presenting cusp of the upper wisdom tooth. I extracted the second molar and relief again followed.

"In six months' time she again presented herself with the same typical pain on the *left* side, but more severe than ever. The most careful and prolonged examination failed to disclose the slightest sign of the advent of a wisdom tooth, or even of its existence ; yet from former experience, I, without hesitation extracted the second molar under gas, and I have here the tooth for your inspection. The specimen clearly shows the injury done by the advancing, though buried, tooth : the distal half of the posterior buccal root and some of the crown have disappeared, and the nerve canal is completely exposed for more than half the length of the root. It was impossible to diagnose this till after the extraction. The operation was followed by immediate relief, and the patient is now absolutely free from neuralgia.

"I may observe that no signs of local inflammation or irritation were discoverable from first to last in this case. The treatment adopted of extracting a useful second molar instead of digging out the less useful third molar, was, I believe, correct in this case. All four wisdom teeth were large, well-developed, healthy teeth, and eventually took up excellent and useful positions.

"The case is instructive, as its history is so definite and

complete, and strikingly illustrates cause and effect no less than four consecutive times in the same individual ; and lastly, as illustrating the serious and unsuspected damage that a buried tooth can inflict by pressure against the roots of a neighbour which stands in the way of the progress."

The Chairman said Mr. Hunt's case, or rather series of cases, were exceedingly interesting. He thought that trouble of this sort from the wisdom teeth was more common than it was generally considered to be. At all events, he met with such cases pretty frequently in his own practice, and had almost come to look upon the wisdom teeth as natural enemies, to be got rid of whenever an opportunity offered. Recently, his son, Mr. Wentworth White, had asked his advice with regard to a gentleman, aged forty, who had for some time been suffering severely from neuralgia affecting the left side of the face. He had consulted another practitioner, who had extracted the second upper bicuspid, which was found to be sound, and this gave no relief. Mr. White could find nothing wrong with the teeth on that side in the lower jaw, but on carefully testing the upper teeth the second molar was found to be sensitive, and it was decided to extract it. It was then found that the pressure of the wisdom tooth had made a cavity on the distal surface. The patient obtained immediate relief.

Mr. J. S. Turner thought that most of those present must be familiar with such cases. The wisdom tooth, however, was not the only tooth which was capable of causing mischief of this sort. At the March meeting Mr. White showed a lateral which had undergone very expensive absorption, owing to the pressure of a neighbouring tooth, and quite recently he had himself removed a lateral in exactly the same condition, absorption having taken place to such an extent as to expose the pulp cavity, due to the pressure of the canine, which was coming down in front of it. A remarkable feature of the case was that the patient, a youth, said it had not caused him any inconvenience.

Mr. C. J. B. Wallis showed the skull of a Zulu, a very fine hippopotamus skull, the jaws of a sword fish (also a very fine specimen), and the jaws of a large extinct animal, which

he believed to have been an ichthyosaurus ; this last had been dug up in Egypt.

Mr. Hutchinson remarked that the hippopotamus skull was a magnificent specimen, and begged Mr. Wallis to use his influence with the owner to induce him to present it to the Society. The skull then in the Museum was not nearly such a fine one.

Mr. D. Hepburn showed a model of the mouth and jaws of a young man, aged twenty-three, who had been treated at St. George's Hospital thirteen years ago for "fever." He had at the same time some necrosis of the jaw, and extensive sloughing of the soft parts. Cicatrization eventually took place, but accompanied by ankylosis of the lower jaw. The jaw was now practically immovable; he had not the slightest power of mastication, and only a very small aperture between the teeth on the left side of the mouth. Contraction seemed to be still going on, for the upper teeth were being slowly forced outwards. In spite of his inability to masticate, the patient enjoyed very good health, and Mr. Hepburn did not feel justified in advising any operative interference at present.

Mr. R. H. Woodhouse showed a model of the upper jaw of a man, aged thirty-four, which had been sent to him by Dr. Walker. At the age of ten the right permanent central was broken at the cervical line by a blow from a stone. Abscess ensued, and the root was extracted three or four months after the accident. Three years ago, seventeen years after the accident, the right permanent canine showed signs of eruption. The permanent right lateral and temporary canine were firmly articulated.

He also handed round a model of the upper jaw of a young man, aged seventeen, which had been sent as a donation to the Museum by Mr. Adams Parker, of Birmingham. His first dentition was perfectly natural. With the second dentition a supernumerary tooth appeared to the right of the middle line; this became loose and was extracted when a second supernumerary tooth appeared in the same position. It was firmly implanted and quite sound.

The Chairman then called upon Dr. St. George Elliott for his communication on "Bridge-work." (*See page*)

ARROINTMENTS.

Bennett Storer, F.R.C.S., Eng., L.R.C.P., Lond., D.D.S., Eng., appointed Dental Surgeon to the Dental Hospital of London, *vice* S. J. Hutchinson, M.R.C.S., L.D.S., resigned.

MONTHLY REPORT OF CASES TREATED AT THE DENTAL HOSPITAL OF LONDON.

DURING THE MONTH OF APRIL, 1885.			
Extractions	{ Children under 14.	.	499
" "	{ Adults.	.	866
" "	{ Under Nitrous Oxide	.	540
Gold Fillings	.	.	278
Other Stoppings	.	.	796
Irregularities of the Teeth	.	.	125
Miscellaneous Cases	.	.	141
Advice	.	.	144
			<u>3389</u>

ARTHUR KING, House Surgeon.

DENTAL HOSPITAL REPORTS. NATIONAL DENTAL HOSPITAL
MONTHLY STATEMENT OF OPERATIONS FROM MAR. 1st. TO MAR. 28th.

Number of patients attended	.	.	.	.	.	.	1566
Extractions	{ Children under 14	.	.	.	.	.	447
" "	{ Adults	.	.	.	.	.	532
" "	{ Under Nitrous Oxide	.	.	.	.	.	442
Gold stoppings	.	.	.	.	.	.	84
Sheets of Gold used independent of Pellets	.	.	.	.	.	.
Other Stoppings	.	.	.	.	.	.	651
Advice and Scaling	.	.	.	.	.	.	294
Irregularities of the Teeth	.	.	.	.	.	.	285
Miscellaneous	.	.	.	.	.	.	144
TOTAL							<u>2879</u>

ISIDORE FREDERICK PRAGER, House Surgeon.

MONTHLY REPORT OF CASES TREATED AT THE BIRMINGHAM
DENTAL HOSPITAL, MAY, 1885.

Gold Fillings	.	.	.	.	.	.	.	3
Other Fillings	.	.	.	.	.	.	.	137
Miscellaneous	.	.	.	.	.	.	.	22
Cases treated under an anæsthetic	.	.	.	.	.	.	.	11
Extractions	.	.	.	.	.	.	.	709
Total								<u>881</u>

FRANK H. GOFFE, L.D.S., House Surgeon.

EPITHELIOMA OF THE TONGUE.

By FRED. BOWREMAN JESSETT, F.R.C.S., Eng.
Surgeon to the Cancer Hospital, Brompton.

Continued from page 541.

Seat.—In examining 81 cases, which I have collected of epithelioma of the tongue, I have found the disease present on either one or other border or edge of the tongue in fifty-five instances on the tip in eight, on the dorsum in ten, on the under surface or frenum in five, and in the floor of the mouth in three. It will be seen, therefore, how very much more frequently the edges or borders are affected than is the body of the organ. This is what one would naturally expect, for, as has been shown before, the chief cause of cancer of the tongue is constant local irritation, keeping up an inflammatory action in some one part of the organ, and the sides of the tongue are much more exposed to this source of irritation from carious and jagged teeth and from the ends of clay pipes than either the dorsum or the under surface.

It has been shown by some German authors, as well as by Mr. Barker, that the right side of the tongue is more frequently affected than the left; Mr. Morris, however, did not find this the rule. In my own cases the side has often not been mentioned, therefore, I am unable to corroborate or deny Mr. Barker's statement; neither do I think it at all material.

The method in which the disease commences is interesting, and here I am able to compare the initial stage of the cases collected by myself with that of Mr. Barker and Mr. Morris.

	Barker.	Morris.	Author.	Total.
1.—As a small fissure, or crack...	4	28	45	77
2.—As a pimple or small tubercle ...	17	7	16	40
3.—As a nodule or blister ...	7	8	10	25
4.—As an ulcer spreading from the floor of the mouth ...	2	3	0	5
5.—As an ulcer spreading from the pillars of the fauces ...	0	1	0	1
6.—As a general soreness or feeling of rawness ...	8	2	5	15
7.—As an ulcer spreading from a wound or injury ...	18	0	5	23
	56	49	81	186

	Barker.	Morris.	Author.	Total.
1.—On dorsum of tongue ...	0	4	10	14
2.—On tip of tongue ...	1	4	8	13
3.—On edge of tongue ...	19	25	55	99
4.—On under surface ...	0	1	5	6
5.—On under surface and edge	1	1	0	2
6.—In the substance ...	5	5	0	10
7.—On floor of mouth and tongue	2	3	3	8
8.—As a general soreness with fixation of tongue ...	8	2	0	10
9.—Part not mentioned ...	20	4	0	24
	56	49	81	186

It will be thus seen that nearly half of the total number of cases above referred to, commenced as a fissure or crack, while in 21.5 per cent of the cases the initial stage was attributed to a pimple or small tubercle, and 13.5 per cent., to a nodule or blister. As, however, no doubt a large number of these cases attributed to fissure or cracks really commenced as tubercles, pimples, or nodules, the per centage of the last causes of origin should very much be increased. We should therefore look with extreme suspicion on cases that present themselves over 45 years of age who have these indolent fissures, or hard nodules, and to excise such diseased parts as early as possible. The next most frequent way in which the disease commences is from an injury or cut. We must therefore look with great anxiety on any such injury to the tongue that takes on an ulcerative character.

In whatever form the disease commences it is nearly always seated more on one side of the tongue than the other, and if left to itself will soon run into an ulcer of characteristic type, which spreads somewhat quickly into the floor of the mouth extending to the jaws or fauces, fixing the tongue and causing exquisite pain, and from the nature of the ulcerated surface the smell is most offensive, and saliva is constantly dribbling from the mouth. The ulcer is usually very ragged, with large, reddish granulations interspersed with sloughy shreds of broken-down material. The tongue in the more advanced stages may be entirely or nearly eaten away, leaving a deep, filthy, sloughy, ulcerated surface, occupying the whole of the floor of the mouth. The submaxillary and sublingual glands are deeply affected, and very shortly the glands in the anterior triangle of the neck become infiltrated with the disease, even

down to the clavicle. These glands are situated chiefly around the sheath of the vessels.

These conditions may be confounded with broken down gummata, or tubercular ulcer, as has been referred to in the early part of these remarks. Gummata are, however, usually seated more in the body of the organ, are generally for some time present as a smooth elastic lump, accompanied with no ulceration, when it softens, breaks down, and forms a deep, sloughy ulcer. The history of syphilis also is a sure guide to the nature of the disease, and with appropriate anti-syphilitic treatment the ulcer soon improves.

The tubercular ulcer of the tongue is not at all commonly met with. It is as a rule seated on the back of the dorsum of the tongue, although I had a case recently under my charge with a typical ulcer situated in the left border about half-an-inch from the tip. This ulcer is most difficult to distinguish from cancer, but the edges are not so jagged and the base not so sloughy, but has a peculiar boiled, sago-like appearance. No doubt in scraping this ulcer bacilli would be always found by microscopic examination and under treatment with cod liver oil, iodide of iron, and dusting the ulcer with iodoform, improvement would take place.

People suffering from cancerous disease of the tongue suffer excruciating torture, and from the extremely offensive discharge their existence is intolerable to themselves and a burden to all that are nearest and dearest to them. So much so that they often pray to have any operation performed, in the hope, if no actual good results are obtained, at any rate their suffering may be more speedily brought to an end. Their general health early fails, their appetite disappears, and from the foetid breath constantly inhaled they become more or less poisoned.

It is not easy to estimate the natural duration of this disease, as under different circumstances, age, strength, and capacity of endurance, must necessarily play an important part as to the time a patient may resist its exhausting influences. From six to eighteen months, may, however, be taken as about the usual mean length of time in which a patient may live after the ulcer has once taken a firm hold, and

is not interfered with by operations. The majority will certainly die in less than a twelvemonth.

Dissemination of the disease is very rare. This, as Mr. Butlin has pointed out, is extremely uncommon where the disease is limited to the tongue. In one case, which died sixteen months after the commencement of the disease, cancerous deposits were found in the left supra-renal cavity, but in this case the microscopic character was not conclusive. Mr. Butlin mentions one or two other cases in which secondary deposits were found in the liver and rib. He examined Middlesex Hospital Reports for eight years, and from these he collected nineteen cases of patients who died from cancer or epithelioma of the tongue, either in unoperated on or recurrent. In every case the lymphatic glands were cancerous. In only two of them were there secondary deposits in other organs. In one case a solitary mass of small size was found in the liver, in the other many growths in the pleuræ and lungs, in the first case the disease had existed for about one; in the latter for between two and three years. We may regard epithelioma of the tongue, therefore, as a disease which eats way the substance of the organ, extending into the neighbouring parts, and implicating the cervical and submaxillary glands, but rarely is it disseminated in other organs of the body.

This is, I think, a strong argument why in cancer of the tongue early and free excisions should be practised.

I have in no case seen secondary deposits in other organs of the body after death, when the primary cancer is limited to the tongue.

I look upon cancer of the tongue, therefore, as a local affection, most dangerous to life, not from its power of disseminating the disease through the body but by the position it occupies, preventing the sufferer from taking nourishment and constantly poisoning his system by the foetid saliva and discharges which are swallowed and the air poisoned which enters the lungs. He is also worn out by the constant excruciating pain, which is not limited to the diseased parts themselves but extends to the ear, temple and occiput; so that relief is only obtained by his being constantly kept under

the influence of large doses of opium, unless, indeed the diseased portions are removed by surgical interference or the gustating nerve divided as recommended by the late Mr. Hilton and Mr. Moore.

Diagnosis and Treatment.—Little, I fear, can be done medicinally for the cure of cancer of the tongue, or indeed, of any other part, but bearing in mind what I have already said as to the difficulty of distinguishing between a syphilitic or tubercular and an epithelial ulcer in their early stages, should there be any doubt I always give a fortnight's trial of drugs ; thus, in the case of a questionable syphilitic ulcer give large doses of iodide of potassium gr. x., or in cases that are weak and debilitated give

R. Potas. Iodid. gr. v.
 Amm. carb. gr. v.
 Liq. hydrarg. perchl. ʒj
 Tinct. cinch. co. ʒss.
 Liq. cinch. m. x.
 Aquæ ʒj.

at the same time dusting the ulcer over with equal parts of calomel and iodoform several times a day.

In the case of a tubercular ulcer cod liver oil, syrup of the iodide of iron, and phosphate of iron should be given, at the same time dusting the ulcer over with iodoform.

In case of doubt I would always recommend you to adopt Mr. Butlin's plan of scraping the ulcer and examining the *débris* under the microscope, not that I have ever succeeded in arriving at any definite diagnosis by this method, but as Mr. Butlin asserts in many cases he has succeeded in distinguishing between the malignant and tubercular or syphilitic ulcers, I think we should always adopt this method. Much more, however, may be learned by enquiring into the history of the case. Syphilitic ulcers are very common, but here there is always a distinct history of syphilis, and from the other symptoms of secondary syphilis, there is, as a rule, but little difficulty in arriving at a correct conclusion as to the true nature of the ulcer.

The tubercular ulcer is, however, very much more difficult to diagnose, here however, perhaps under the microscope

bacilli may be discovered which would at once settle the question. I have never seen the submaxillary or cervical glands enlarged in this class of ulcer. History also is of the greatest possible assistance, as the following case well illustrates :

James J——, aged 54, married, occupation stone-mason. *Family history*.—Patient states that his father was killed in a railway accident and was, up to the time of his death a healthy man ; his grandfather on his father's side lived to be over 90 years of age ; his mother is living and in good health and there does not appear to be any family history either of phthisis or cancer. Patient had syphilis 20 years ago, and there is now a scar on the penis where the sore was situated ; he states that the secondary symptoms, etc., were very mild. Patient is a stone-mason by trade and states that up to the winter of 1882 he enjoyed fairly good health. About the end of November of that year he began to be troubled with a hacking cough, and as time went on he noticed that occasionally a little blood was mixed with the expectoration ; he has never coughed up much blood. In January, 1883, he first attended the Hospital for Consumption, and continued to attend there as an out-patient until May, when he went to Ventnor, where he stayed nine weeks. On his return to London his lung condition was better and since that time he has never spat up any blood. At the same time that he began to attend the Hospital for Consumption he "knocked off work," and as he says : "had little else to do but smoke ;" he smoked a short clay pipe and about the end of February or the beginning of March he first noticed a slight soreness on the left side of the tongue. This condition he put down to irritation from this pipe, and he states that he has often had small sores on his tongue in former years, due, as he believes, to smoking. He was in the habit of touching these sores with nitrate of silver and they used to get well. He treated this last sore on the same lines, but unfortunately without the same satisfactory results. The ulcer remained small and was treated by various applications. After his return from Ventnor his tongue was worse and the ulcer had increased in size.

On admission into the Cancer Hospital on November 4th, 1883, patient had an ulcer on the anterior part of the left margin of his tongue, measuring about three-quarters-of-an-inch in length, and about half-an-inch in width at the widest part; the floor was comparatively clean and had a rosy, slightly nodular aspect; the edges were somewhat thickened but not irregular, everted or undermined; but shelved down to the floor of the ulcer. There are no enlarged lymphatic glands. On examining patient's lung there was found to be marked dulness over the left apex and also for some little way below the clavicle; there was also increased vocal resonance over the same area; breath sounds feeble but no crepitations and no signs of a cavity. Patient in answer to questions states that he has got considerably thinner during the past twelve months.

December 13th.—Since admission the ulcer has remained more or less stationary.

Literature is, so far as I know, absolutely silent upon this disease, and with the exception of a short notice in "Holme's System of Surgery," by Mr. A. E. Barker, I have failed to find any reference to the disease in any English text book. A most interesting discussion, however, took place at the Pathological Society, in Session 1883-4, in which I showed the case, the history of which I have given, and cases were also shown by other surgeons.

The seat of these ulcers are chiefly at the tip or anterior border of the tongue, upon, or encroaching on the under surface, sometimes spreading over the latter.

The ulcer commences in the submucous tissue, usually as a small, hard nodule, often there are several of these ulcers with considerable induration of the base. The tissue is not destroyed as a rule very deeply. The most characteristic part about the lesion is the appearance in most cases of small secondary points breaking down round the first. The edges are abrupt, deep, red and much indurated and everted. The lymphatic glands are rarely affected and never indurated. In the case given above the ulcer had been present for over ten months, yet there was no enlargement of any of the sub-maxillary or cervical glands.

These ulcers are always secondary to deposit of tubercule in the lungs, and I am inclined to think that the ulcer is originally a simple one and becomes tubercular by being inoculated by the bacilli in the sputa which is continually being ejected from the lungs. In the above case the man had had numerous ulcers on his tongue but they had always healed readily until his lung mischief increasing, one of these ulcers took upon itself a tubercular form.

If, then, a patient presents himself with an ulcer on the tip or side of the tongue, with no history of syphilis whatever, and with unmistakable signs of phthisis I think you may decide that such ulcer is probably tubercular.

These ulcers are very difficult to heal, and although you may considerably improve the general condition yet the ulcer is obstinate and spreads steadily; this is the result of the bacilli which are constantly eating their way into new healthy tissues. It must not be forgotten, moreover, that these ulcers are very liable to take on a malignant character. If then after two or three weeks treatment the ulcer still has a tendency to increase you must at once decide to remove it, and that pretty freely, so as to be clear of all deciduous tissues. The wounded surface should be kept sprinkled with iodoform to prevent the possibility of further inoculation by the bacilli of the lung, and it will be found speedily to heal. In the treatment of cancerous ulcer of the tongue, should the patient refuse operative measures, I have seen the most benefit derived from the free use of arsenic in combination with the chlorate and bromide of potash.

R.	Liq. arseniculis	℥. v.
	Potas. chlorat	gr. xv.
	Potas. bromid	gr. xx.
	Aquæ	℥j

The arsenic preparations are especially applicable when the disease commences as a general soreness of the tongue, or ichthyosis. If the patient is debilitated and suffering much pain the combination of arseniate of iron and morphia.

R.	Ferr. arseniat	gr. $\frac{1}{16}$
	Morphiæ muriat.	$\frac{1}{6}$

To be taken after meals three times a day, often give

great relief. At the same time the mouth should be constantly washed out with a solution of chlorate of potash or boro-glyceride.

No drug, however, has yet been discovered which has any effect in curing cancer, but if cancer is, as I believe it to be, a constitutional (I use the term here in its widest sense) and not a purely local disease, if such is the case, the time may, and probably will come, when some drug will be discovered which will arrest if not cure the disease.

Only just lately, Dr. Bandeiro, surgeon to the hospital Pedro II, in Pernambuco, Brazil, has written extolling the use of the juice of the alveloz as an external application in certain forms of epithelial cancer of the lips, nose, face and eyelids, but not so successful in ulcerated sarcomas or carcinomas not of the epithelial variety. I have written for some of this preparation and shall give it a trial. Some has been sent to the Cancer Hospital, Liverpool, where doubtless it will be tried and the result reported in due course.

(To be Continued.)

COMPARATIVE DENTAL PATHOLOGY.

INJURIES AND DISEASES OF THE JAWS IN ANIMALS.

By J. BLAND SUTTON, F.R.C.S., Eng., Lecturer on Comparative Anatomy, Middlesex Hospital Medical School.

Continued from page 548.

Before proceeding to sum up the evidence on these cases, it is necessary to take into consideration the teeth of another interesting animal from the Falkland Islands, the elephant seal, *Macrorhinus leoninus*, which often attains astonishing proportions. At one time these creatures were frequent on the islands, but now they are very rare. The teeth have been very carefully described and figured by Professor Flower, in the "Proceedings of the Zoological Society," 1881; the following is taken from his description:—

Leaving out of consideration the exceedingly aberrant and specialised walrus, the teeth of the elephant seal are more reduced in number, size, and form than those of any

other Pinnipedia, the only other member of the group which agrees with it in most of these characteristics being the closely allied *Cystophora* of the northern seas.

The dentition when complete is

$$i \frac{3}{2}. \quad c \frac{1}{1}. \quad p.m. \frac{4}{4}. \quad m \frac{1}{1}$$

though it frequently happens that one or more of the true molars, especially those of the upper jaw, are rudimentary or wanting. All the teeth, even the canines, are remarkable for their comparatively small enamel-covered crowns, and for the large size of their simple roots, which continue to grow in width as well as length during the adolescence of the animal, and are further enlarged in thickness by the addition of a considerable layer of cementum to their outer surface. In this character the teeth resemble those of many of the Odontocetes, so much so that in the case of isolated fossil teeth of the crag formation, it is often very difficult, if not impossible to say whether they come from the Cetaceans or the Seals. Although other Pinnipeds show this peculiarity, it is carried to its greatest extent in the elephant seal. The very small size of all the teeth except the canines, and more especially those of the molar series, in proportion to the great magnitude of the animal, is very striking. They must, in fact, be almost functionless. The molars are reduced to the extreme of simplicity. Each has a single long, tapering root, shaped something like a carrot, having a thickened shoulder near the neck, caused by the deposition of cementum and which projects above the alveolus in old animals.

The crowns when young present traces only of the divisions into pointed cusps or lobes, so characteristic of the molars of most seals—mere grooves upon the surface becoming deeper towards the apex, to which they converge, and marking off rudimentary cusps, more distinct on the outer than the inner surface of the tooth. The fifth molar in both upper and lower jaws is of more simple character than the others, often only a simple cone.

Mr. Tomes, in his "System of Dental Surgery," considers that a slight degree of erosion among seals is very common, and refers to a specimen of *Otaria stelleri* in the Museum of

the College of Surgeons, which exhibits a well-marked eroded condition.

It seems to me that the curious ridged appearance often seen in the small functionless teeth of the walrus is to be regarded as a species of erosion.

In the cases just considered there are two things to bear in mind—the association of erosion with constitutional bone disease, and with functionless, and therefore imperfectly developed teeth. Serious disease during dentition often leads to ill-formed teeth, hence one circumstance asserts itself most in connection with erosion of the teeth in animals, viz., defective development. Whether constitutional disease and imperfect development can be regarded as causes of erosion occurring in human subjects, I must leave to those more intimately acquainted with their teeth than myself, but it seems a very probable explanation.

TUMOURS, &c.

New formations of any description in connection with the jaws of animals are exceedingly uncommon, and very few cases are recorded in the literature of tumours.*

In the present paper the known varieties of the morbid growths found in this situation may be arranged as follows:—

- (a) Cystic tumours.
- (b) Exostoses.
- (c) Sarcomata.
- (d) Actinomycosis.

Cystic Tumours—Dentigerous Cysts.

The term, “dentigerous cyst,” is restricted to those cystic formations met with in the maxillary bones associated with misplaced, or imperfectly developed teeth.

It is an important point to exclude from this category those teeth-bearing cysts which occur with especial frequency in the head, particularly in the immediate neighbourhood of the temporal bone, in relation with the petrous portion. These strictly come under the definition of Dermoid Cysts.

In an interesting paper published in the *Gazetta Medico-Veterinaria*, of Milan, by Professors L. Buonsanti and

* I exclude from the term, tumour, the infectious granulomata, glanders, farcy, and the like.

Generali, translated in the "Veterinarian," Vol. XX, by Fleming, and entitled "Dental Cysts," an admirable account of these formations is given, from which it may readily be perceived that those cases of aberrant teeth occurring with tolerable frequency in horses and oxen in the temporal, petrous, and sphenoidal regions of the skull base are really dermoid, and the term "dentigerous" ought not to be applied to them. Nevertheless, true dentigerous cysts do occur in animals, and one or two of the examples mentioned in the paper quoted above were undoubtedly of this nature.

Salter has described an indubitable instance of "dentigerous" cyst in the superior maxilla of a young sheep. The specimen was in the Museum of St. Bartholomew's Hospital. In this case the central incisor is attached to the side of a large cyst, the fang of the tooth being almost destitute of bony covering. The Museum of the College of Surgeons, London, possesses a specimen of dentigerous cyst formed round the retained first incisor in the lower jaw of a pig. An incisor tooth is wanting externally on each side. On the right side the crown of the retained tooth is firmly fixed in the bony wall of a cyst which has a membranous lining and was filled with caseous pus and fragments of food. The latter had obtained entrance by an opening in the alveolar process, situated near the middle line. A cyst on the left side is partially laid open, and its contents, similar to those which filled the right cyst, are exposed to view (Museum Catalogue).

True dentigerous cysts have been observed in the horse, sheep, and pig, but as in man they are extremely uncommon.

The Museum of the Odontological Society of Great Britain contains a specimen illustrating a dentigerous cyst in the lower jaw of a lamb. There is also a second specimen apparently of the same nature, illustrating the occurrence of a similar cyst in the lower jaw of a sheep, near the symphysis.

Sir James Paget, in his Lectures on Surgical Pathology, refers to a case of Professor Baum, where a woman had one of these cysts in each antrum, which had been in progress for thirty years; a canine tooth was removed from one cyst and a molar from the other.

A curious example has come under my own notice in a goat, which for the deformity it produced certainly equals this very remarkable case of Baum's, and excels it in the number of cysts. Each antrum was occupied by a cyst, and each lower jaw contained one near its angle.

In all parts of the skull the bone was so soft that it could be cut easily with a knife, but the bodies of the superior maxillæ were almost as thin as ordinary writing paper.

On making a longitudinal cut through the skull so as to pass through the antrum, its interior was found to contain a thick-walled cyst with what appeared to be the first permanent molar in its centre; The superior maxillary division of the fifth nerve is seen coursing over the summit of the cyst.

There can be little doubt that the parietes of this tooth-containing cavity are really the walls of the tooth follicle enormously thickened, for on making sections of the part it is found to be made of connective tissue undergoing ossification, and this accords with the structure of the tooth follicle of a healthy ruminant compared with it.

In the lower jaws the case is not quite so evident. Two spongy masses with a small internal cavity, filled with a pulpy-looking material, occupy the body of the bone near the ramus, but on the most careful examination no trace of a tooth could be discovered in the spongy mass, either on the right side or the left; nevertheless, the morbid masses occupied the situation of teeth, and corresponded in structure with the cyst in the upper jaw. There can be little reasonable doubt that they have the same origin, viz., from the abnormal growth of tooth follicles.

About a month after the discovery of this goat's skull, I was able, through the courtesy of Mr. Shave, at the Royal Veterinary College, to examine the skull of a goat a year old, which had been sent to that institution. There was a large swelling at the angle of each lower jaw, which on section was found to result from a soft mass of spongy tissue which had grown in the situation of one of the molar teeth. Under the microscope this tissue exhibited all the characters of the cyst wall in the upper jaw of the goat first described, but as in that case the most careful search failed to reveal a tooth; yet there can be little doubt that these were of the

same nature as those in my goat, and that the growth of the tooth had been suppressed in an early stage.

These two cases shed light on a tumour connected with the jaw of a goat described by Virchow in his "Cellular Pathology," chapter xix, as a soft osteoma. The tumour affected the superior and inferior maxillæ, but each separately; it had such little density that it could be cut with a knife. On comparing Virchow's account and the figure of the histological details of this tumour, I am convinced that it was of the nature of the growths just described, and was really a cyst of the same nature as in the other goats.

These tumours have other interesting features, for they show, as Virchow very graphically pointed out in his specimens, "the transitions from connective tissue into osteoid tissue. The trabecular spaces formed of spongy bone containing delicate connective tissue is very striking, exactly recalling the condition seen beneath the periosteum in a long bone severely affected with rickets." The bands of fibres run parallel with the osseous trabeculæ, and dotted here and there large rounded concentric masses of earthy matter can easily be distinguished.

These cases are also interesting, for they serve to explain why the walls of dentigerous cysts are sometimes made up of soft tissue, and at other have bony walls. In the case of the first goat the walls of the follicle were soft because its development had not yet reached the stage at which calcification should occur; had this animal lived there can be little doubt that in course of time this wall would have become ossified and the tooth have been surrounded by a bony capsule such as we know occurs in some cysts of this kind met with in the human subject.

The tumours in the goat's jaw have yet another interest. It has long been known that herbivorous animals, especially the horse are liable to odontomes in connection with the molar teeth. These tooth tumours are composed almost entirely of cementum.

The most careful description of an odontome of this kind is contained in the Transactions of this Society for 1871-2. Mr. Chas. Tomes gives a careful account of the histological

structure of one from the molar teeth of a horse, weighing ten ounces.

The mass is composed almost entirely of cementum which in its outer portion is arranged in concentric layers. Inside the laminated portion the mass consisted principally of osteo-dentine. On carefully going into the details of other examples of cementomata occurring in animals, I have come to the conclusion that the alveolar-dental periosteum is responsible for these masses, and that if the goats in whom the above described tumours were found had lived longer we should have found odontomes instead of soft tumours, and that in these cases we have really to do with a very early stage of these curious tumours, and it affords certainly a more satisfactory explanation of their origin than the invocation of a hypothetical cement organ.

It is necessary to distinguish between teeth found in dentigerous cysts and teeth retained in the jaws. All teeth which are developed, but not erupted, do not give rise to these cysts. Nevertheless they may at times occasion troubles almost as difficult to deal with. The very good collection of animals' skulls illustrating dental diseases contained in the Museum of the Royal Veterinary College, London, possesses specimens which illustrate the truth of this statement.

In one characteristic example, the skull of a horse, one of the temporary molars may be seen in the upper jaw retaining its position, though thoroughly carious, with the permanent set. During life the animal suffered from a profuse nasal discharge, which resisted treatment, and as the foetor arising from the condition was intolerable, the horse was killed. On dissecting away the outer wall of the antrum, the permanent molar was found in close contiguity to the antrum. A large fistula existed between the carious tooth and the nasal fossa. An exactly similar condition was found on the two sides.

To be concluded.

A DISCUSSION ON DR. ELLIOT'S PAPER ON BRIDGE WORK.*

Dr. A. S. Richmond said the subject under discussion, crown and bridge-work, was one to which he had given some attention, and which interested him greatly. Dr. W. M. Morison, of St. Louis, the inventor of the Morison chair and engine, was, he believed, the first to make gold crowns encircling the roots of molar and bicuspid teeth; this was in 1868. In 1876, Dr. Cassius M. Richmond, who was then practising at San Francisco, produced the "Richmond crown." This was a porcelain, or porcelain-faced, crown attached to the natural root by a pin or tube, the attachment being strengthened by a gold band encircling the root. This method was still employed by the best operators throughout the world, and had never been improved upon since.

With regard to bridge-work he would hand round some models of cases which had been under his own care, showing various adaptations of the method. He had a piece of bridge-work in his own mouth which was put in in 1876, and which had therefore stood the test of nine years' wear. In 1878, he had a case in which a loose and decayed lateral adjoined a sound and healthy central. After trying various experiments with the lateral, he extracted it and attached a lateral crown to the central and canine; the work had stood well up to the present time. Early in 1880 he pivoted a first molar with a Morison gold crown, and the canine on the same side with a porcelain-faced crown, connecting them by a bridge carrying the two bicuspids; this also was still in use. These cases might serve to show the lasting character of the work. There was no difficulty whatever in keeping it clean, the teeth being supported clear of the gum, and the whole fitted as it should be, in a proper workmanlike manner.

Dr. W. Mitchell said he had had a case to deal with that day in which he had been obliged to modify the ordinary Richmond method. He had occasion to remove a Bonwill crown, but found the pin so firmly fixed in the root by amalgam that he found it impossible to remove it. He therefore cut it off even with the gum margin, and then with a fine fissure burr removed the amalgam all round it to the

* Read before the Odontological Society of Great Britain.

the thickness of about two lines, and to the depth of about a quarter of an inch. He then made the band as usual, soldered on the top, and made a platina tube to fit the pin. He then cut away a portion of the top, placed the band and tube in position, and waxed them together in the mouth. They were then removed in their proper relation for soldering, after which he replaced them and fitted the tooth in the ordinary way. Then, after waxing together and investing in sand and plaster, the soldering was completed and the work was polished and inserted in the mouth, where it fitted perfectly. He thought this plan was really an improvement on the usual method, for the tube added stiffness to the structure, making it much firmer than where the ordinary pin alone was used. Where amalgam was used for setting the pin, of course platina both for pin and tube was indispensable, but he did not see why a good strong cement could not be used with advantage.

Mr. J. S. Turner said that whilst he could not help admiring the ingenuity displayed in these methods of pivoting and bridge-work, he was rather at a loss to know what was gained by all this elaboration. The results might be perfectly satisfactory in a certain number of cases, but it must be remembered that operators did not always know of their own failures. When patients were dissatisfied with what had been done for them by one practitioner, they were apt to go to another. He had lately come across a patient who had had five front teeth pivoted sixteen years ago, viz., two centrals, a lateral, and two canines, and they were still firm and useful. The pivoting was done in the old-fashioned way : the roots were cut down and polished, a pin inserted in the canal, and a model taken, then a tube tooth was fitted, first on the model then to the root, a little floss silk being wound round the pin before it is forced into the root. The plan of pivoting with nuts and screws might sometimes be useful, but he thought that the insertion of the screw and tightening the nut must be a more unpleasant process than fitting a pin into the canal in the old way. He had seen many cases when with Mr. Cartwright of teeth which were shed in the ordinary course of nature with pivot crowns attached, which had been in use for a great number of years, and others must have frequently met with similar cases. Seeing then, that the results of the old method were generally so satisfactory, he failed to see the advantage of these later and more elaborate methods.

Mr. R. H. Woodhouse said he had lately removed a pivoted tooth which had been in use for twenty-three years; the crown was quite firm, but the root was absorbed. He thought this was a triumph for the old method.

The Chairman said he had personally no experience of bridge-work, and he was disposed to agree with Mr. Turner, that there was no great necessity for the use of screws and nuts. He had been in practice a good many years, and he thoroughly agreed with what Mr. Turner had said as to the good results obtained by the old method of pivoting stumps with natural teeth. The pin was made of *hard* gold; a little floss silk was wound round it, it was then moistened with mastic varnish, and forced well up the canal. Teeth pivoted in this way lasted from twelve to thirty years, and the pin never came out—no one ever thought of its doing so. He felt bound to admit, however, that he had not been quite so successful with mineral teeth. He would now call upon Dr. Elliott to reply.

Dr. Elliott said he had himself used the old method of pivoting, but he wished to advance with the times. The weak point of the method described by Mr. Turner, was that the front edge of the tooth resting on the front of the stump gave a considerable amount of leverage, and as the result of any strain on the tooth the pivot was sometimes pulled out. Thus a patient of his who had a tooth pivoted in this way lost one crown and bent another. Another objection was that the pin would sometimes stop short in the canal, and use what force you might you could not get the crown close up to the stump.

In his lectures at the National Dental Hospital he had been in the habit of describing sixty different methods of pivoting, but he only used two in his own practice, viz., the one he had already described and the Flagg process. This latter method he considered a very good one, and quite as simple as the older method; but thought one of the best for front teeth, it was not as well adapted to bicuspid as the other. A plain plate tooth was soldered to a pin; this was passed up the nerve canal and packed all about with amalgam. He had brought his drawer of pivoting instruments with him in case any of the members present might like to look over them.

SOME POINTS IN DENTAL DIAGNOSIS.

By ARTHUR KING, L.D.S., R.C.S.. Eng.

(Concluded from page 495.)

The principal symptoms of acute periostitis are :

History : Instead of the throbbing of an inflamed pulp the pain is dull, heavy, and continuous, with a feeling of tension. Neuralgia is not often present ; at first the tooth seems too long, it being raised from its socket by the thickened periosteum. In the early stages, pressure, as the patient biting on it, relieves rather than aggravates the pain, but later any attempt at biting on it causes such intense pain that the patient forbears using that side of the mouth.

Inspection : The pulp cavity if found open is filled with decomposed pulp and particles of food, which have that phosphatic odour peculiar to the decomposition of such structures. The gums are swollen and inflamed, with the free edge more deeply coloured than the surrounding parts.

Percussion causes intense pain, especially in the second stage and the teeth are generally loose.

In chronic periostitis the symptoms at first are much the same as the acute. The distinction depending mainly on the terminations. Thus the acute passes on in a few days into the suppurative state, whereas the chronic may last for months without even leading on to suppuration at all. In this latter neuralgia is often present, (generally not so severe as that caused by an exposed nerve) especially when the periostitis leads on to exostosis of the fangs. The necks of the teeth get clad with tartar, as the patient does not use that side for mastication, nor can he brush them on account of the pain such a proceeding would cause him. This happens also when a nerve has been exposed for some time. It is always safe, when there is a large collection of tartar on one side of the mouth only, to tell your patients that they do not eat on that side. I did this once with great success. My patient had not much faith in me and insisted that the cause of her trouble was on the right side of the mouth ; on the left an immense amount of tartar had collected. She argued with me for some time, until I told her she did not masticate on the left,

and asked why? She was astonished, and merely answered "If you are so clever as to be able to tell on which side I eat, without having seen me do it, I'm sure you will not extract the wrong tooth for me, so please yourself."

In the diagnosis of other forms of periostitis than those caused by caries, such as rheumatic, syphilitic, and that caused by the presence of mercury in the body, we have to go deeply into the history. Generally speaking, these attack most if not all the teeth and are very chronic.

The next stage of the disease, the result of caries we have to consider, is alveolar abscess, which follows rapidly on acute periostitis, if nature on the dental surgeon has not affected a cure by other means.

As suppuration sets in the pain becomes of a severe throbbing character, there may be slight feverishness, a furred tongue or headache present. The gums are much swollen as also is the face, to such an extent sometimes, that the patient cannot open his eyes or mouth.

Before the abscess bursts the tooth is most painful on pressure, but as soon as the pus has found an exit, all symptoms of pain disappear with the swelling, inconvenience only being caused by the foul discharge into the mouth.

I have now followed the course of Dental Caries and its immediate results, from its commencement to the disputed boundary between Dentistry and General Surgery, where I propose to leave it. If I have not carried it far enough, I hope some one may, at no distant date, take up the subject again and gives us a sequel to this paper, as I have tried to add one to the paper previously read on "Some Points in Dental Diagnosis." by Mr. Horn.

In conclusion, I thank you for your kind attention, feeling sure you are very much disappointed at the little you have learned from this paper, my only excuse is that in trying to make it short and interesting I have left out subjects which ought to have been treated. My apology for its elementary nature is that so many of the papers have been so scientific as to be beyond the junior members, and as at this meeting there are a lot present, I think it right they should have a chance of joining in the discussion.

Reflections from the Surgery.

CLINIC OF PROF. GARRETSON AT THE MEDICO-CHIRURGICAL COLLEGE, PHILADELPHIA.

SERVICE IN ORAL SURGERY.

[Reported from *Independent Practitioner*.]

CASE 1.—*Hypertrophy of the Tonsils*.—The patient presented with a marked enlargement of the tonsil of the left side, excessive growth causing much interference with speech, and impairing the sense of hearing by pressure on the Eustachian tube. The condition being of several years' duration, and causing much inconvenience, request was made for removal of the gland, either by cauterization or excision. The professor preferring the cautery to the more severe operation, made use of London paste as the medium for treatment. This preparation consists of equal parts of quick-lime and caustic soda, mixed into a mass by the addition of a few drops of absolute alcohol. Placing the patient in such a position as to get full advantage of the light, the tongue was held down with a depressor, and a small quantity of the paste applied to the parts, on the cup of an ordinary director, and held in contact about one minute. Upon its removal the enlarged surface was seen to assume a dark-red colour, quickly followed by a deep purple, a few hours later the eschar taking on a yellowish-white appearance. The remark was made that anyone, with ordinary precaution, could apply so simple a remedy, care only being required to mix the paste to proper consistency. If too thin, it will run over surrounding tissue and cause unnecessary destruction; if too thick, it will not adhere to the parts intended to be removed. Should such an accident occur, the fauces should be immediately gargled with water. The case was cured by three similar applications to the one described, repeated at intervals of four days, the pain accompanying the treatment being inconsiderable.

CASE II.—*Excision of the Auriculo-Temporal Nerve*.—This was a case in which the patient had suffered some years with neuralgia in the region traversed by this nerve, for which she had received varied remedies of a sedative kind, among others, local applications of chloroform, belladonna, aconite,

opium, and hypodermic injections, in addition to constitutional treatment, but had only been temporarily relieved. The success attending operations for facial neuralgia in this class are not unfrequently so obscure that any treatment resorted to is likely to be experimental at best, no diagnosis being more difficult than that connected with what is ordinarily termed neuralgia. The knowledge that successful results have been obtained in similar cases, prompted the performance of an operation as the only remaining hope of ridding the patient of the almost constant pain to which she had been subjected. Simple division of a nerve is not sufficient, but excision of a portion is necessary, otherwise it will reunite, and the continuity being re-established, the operation certainly fails. The procedure consisted in first making out the position of the superficial temporal artery, behind which the nerve ascends over the base of the zygoma. An incision upward, about one inch in length, was then made through the integuments, the artery being cut and ligated. (Ligation of the artery is not a necessity, but in this case was practiced because of the great congestive condition exhibited about the parts.) The nerve was found in position, and a portion excised. The parts were next drawn together, two stitches inserted, and compresses saturated in phenol-sodique placed at each side of the wound. An overlaying external pad completed the dressing.

CASE III.—*Epylic Tumour*.—To state that a growth is an epylic tumour gives no clue as to diagnosis, the assertion merely indicating position, the name being given to all abnormal growths on the gum. The patient introduced had an extensive tumour, situated in such position as to necessitate the removal of the whole of the alveolar process of the left superior maxilla, from the central incisor tooth to the tuberosity, the intervening teeth being in position. The growth was of an indurated nature, arising mainly from the periosteum, osseous trabeculae passing from the bone beneath. In the early stages of such tumours the mucous membrane is pushed outward, causing small prominences of a rounded shape to appear behind, in front, or between the teeth, eventually assuming extensive proportions. The operation con-

sisted in first extracting the central, lateral, and bicuspid teeth, these latter being involved in the growth, then with a circular saw, revolved by the Bonwill surgical engine probably eight thousand times a minute, the whole of the involved portion of the bone, consisting of the alveolar process and a portion of the floor of the antrum, was cut away, the time occupied being but a few minutes. An operation of this character, previous to the adaptation of the dental engine to surgical purposes, was exceedingly complex, necessitating the making of a cut from the angle of the mouth or the side of the face, and the removal of the diseased parts by the aid of hand-saw and bone forceps, uncertainty prevailing as to whether all the involved portions were cut away. Operating with the engine and saw in the manner described, the professor was enabled to remove only such parts as were connected with the growth, and to say emphatically that it would not recur, neither would any disfigurement result. During the operation the posterior, or descending palatine artery, which supplies the gum tissue of the upper jaw, hard palate and alveoli, was cut, the hemorrhage being controlled by the insertion of a plug into the canal. Subsequently careful syringing was carried on and the patient made a good recovery.

GLYCERINE AGAINST DRY TONGUE AND THIRST.—Surgeon Major S. K. Cotter, in a recent number of the *India Med. Gazette*, relates the case of a patient suffering from enteric fever, who was awakened every ten minutes by the dryness of his tongue, which was parched and covered with sordes. The tongue was painted with glycerine frequently, and the result was that at the first trial the patient slept almost comfortably, waking up about every two hours with the tongue feeling dry, but not really dry to the touch; after renewed application of the glycerine he at once slept again. In six other cases it has been tried and found satisfactory. Surgeon Major Cotter does not attempt to decide whether it acts by increasing secretion from the mucous membrane, dissolving the sordes, or making an artificial coating. But in whatever way it acts, its benefit is vouched for when the tongue is parched during any disease.

British Journal of Dental Science.

LONDON, JULY 1, 1885.

MAL-ODOROUS BREATH.

THIS, one of the commonest ills to which flesh is heir is certainly one of the most disgusting. In every-day life he who is afflicted with this complaint, will be a most undesirable companion; if the malady be at all bad, the fœtor will even ostracise from many social pleasures. These extreme cases, as a rule, are brought early under observation, their very severity rendering advice and treatment indispensable. It is unfortunately not so with the slighter degrees of bad smelling breath, as those who are subject to it are frequently unaware of the ill odour which is exhaled from the mouth and nostrils with each expiration. But apart from the inconveniences which this condition entails upon private individuals in their daily social intercourse, at meals, in the drawing-room or even while walking, riding or driving, there is a further and far more important result following upon ill-smelling breath when it occurs among professional men. Among the countless callings which are nowadays adopted by men, engaged in the struggle for existence, there are very many which necessitate a more or less close proximity of the professional man's person to that of his client. Need we instance the avocation of the dentist, of the physician, of the laryngoscopist, and ophthalmic surgeon? One and all are compelled at some time or another to bring their heads into the immediate neighbourhood of their patient, with the result that the patient has to endure the "worst quarter of an hour" that man can suffer. The position is intolerable, and yet the unhappy patient has seldom the moral courage to present the case fairly before the professional man and so get the evil amended. Of course, dentists are taught to avoid breathing into their patients' faces, but it is seldom their medical brethren are taught anything about the etiquette of practice, and so they go on breathing tranquilly and disgust their patients by their ailment, and yet are wholly unconscious of their own condition.

The evil is so prevalent that it claims the notice of our profession, since the members of it are as a rule more versed in diagnosing and treating these symptoms than are those outside the pale of dentistry. Besides the difficulty at which we have already hinted, namely, that the evil is often unrecognised until very late on in its development, the dentist finds many with which to cope. Thus so many and bizarre in character are the causes of this condition that the utmost caution is requisite in attempting a diagnosis.

The foul breath of a large number of persons arises from conditions entirely within the mouth, while in another class of cases the stomach and its mucous membrane are at fault. Nor can one fail to recognise the impossibility of drawing any hard and fast line even between these two apparently wholly distinct series of causes. For it happens only too often that the mischief commencing in the stomach re-acts upon the whole surface of the alimentary tract and determines on the one hand intestinal catarrh and on the other induces unhealthy changes in the buccal mucous membrane, departures from health which, by vitiating the secretions which pour themselves into the mouth give rise in the end to kindred morbid changes in the teeth and gums.

Among the long list of causes of foul breath, referrible to mouth conditions, the presence of decaying animal and vegetable matter stands pre-eminent. In unequally spaced alveolar arches, in the cracks and crannies of badly formed teeth, one meets with countless hiding places in which particles of food may lodge. Even the usual and, may we add, perfunctory methods of brushing the teeth commonly in vogue, fail to dislodge much of this material. The salivary incrustations which one so constantly meets with even among the well-to-do, again offer further roughened surfaces whereon the accumulation occurs. Nor is this an exaggerated picture, there are more persons than seems possible to whom a dentist's care is unknown, and in these surely the causes of foul breath develope, and sooner or later show their effects. But another class of persons exist, viz., those who have actual dental disease, and as a consequence possess in their mouth one or many abscess cavities from which are exhaled the foetid

odour from the septic pus. Now the dentist, it will be said, can, and will in most cases obviate such obviously preventable causes of foul breath. Again we urge the oft told tale that the public are not aware of how teeth *commence* to become diseased, and until they are driven to the dentist by *pain* they neglect his services and turn a deaf ear to his warnings. It is clearly then of much importance that foetid breath even in its slightest varieties should be insisted upon by medical men and dentists alike as a dangerous symptom and one demanding the most thorough and systematic investigation.

The consequences of foul breathing are further of greater import than is usually recognised. In two ways these results may come about. Firstly the very causes which give rise to the foul breath are competent to provoke the most poisonous materials—poisonous in the sense of containing matters which are able to initiate septic processes in surfaces with which they come in contact. Here, however, the evil does not end, for the whole causeway of the inhaled air, if we may be permitted the expression, which leads from the lips and nostrils into the trachea and hence into the lungs, may be the seat of disease. The air which passes along these passages cannot fail to become tainted, and so the supply of air to the lungs in such cases becomes one laden with deleterious material. The extremely sensitive nature of the mucous membrane of the respiratory tract renders it peculiarly obnoxious to such sources of contaminations, and many are the “small ailments” which owe their origin to this contamination and which evince the most obstinate resistance to treatment because the real cause is overlooked and the only efficacious remedy—a visit to the dentist—is never even thought of.

These are some, but by no means all, of the consequences of foul breath, but these serve well to illustrate the extreme importance of due care being given the study of the condition and the most strenuous effort being made to discover its cause or causes, with the view of employing means curative rather than palliative, hygienic rather than pharmaceutic.

A USEFUL HINT.—The insertion into the handle of the hand mallet of an ordinary magnifying mouth glass near to its end enables the operator to see distal surfaces without laying down the mallet or changing it for a mirror.

PREPARING WAX FOR BASE PLATES.—Dr. Thomas orders to melt the wax and pour it into tin pans about one-fourth of an inch in thickness and take it out when cold and put into warm water until quite soft, and to use a clothes' wringer and reduce it gradually until it is as thin as needed.

HOW TO RENEW THE PACKING OF A SYRINGE.—When the leathers become so hard as to be unpleasant, wash them with soap, apply fresh machine oil, and rub them with toilet soap after dipping it into water. They will work as nicely as new ones.

GOUTY TEETH.—Dr. Saundby, before one of the Medical Societies, showed a patient, the subject of chronic constitutional gout, and also plaster-casts, to illustrate the type of teeth seen in gouty persons, where these structures are worn down so as to be very little above the surface of the gum. He regarded this peculiarity as quite characteristic, and of great diagnostic value in many cases of obscure disease, depending upon the gouty diathesis. He referred to a recent statement by Dr. Dyce Duckworth, that, out of one hundred typical cases of gout examined by him, the teeth were sound and well formed, and expressed his dissent from the general accuracy of the conclusion drawn from that observation.

ENGINE BRUSH.—The following method, according to the *Dental Register*, presents advantages: Take your engine porte-polisher and insert in it all the bristles it will hold, then drive into the centre of the brush a hard, wood wedge, which should be notched to break off even with the end of the porte. Cut the bristles, leaving them about a quarter of an inch in length. A few minutes previous to using the brush, place it in water to tighten the wedge. This brush is very useful in cleaning the teeth and finishing fillings.

A NEW "WRINKLE" IN POLISHING RUBBER PLATES.—Mr. W. C. Bunker advises : "After the usual filing, scraping, and sand-papering comes, of course, the felt, buff, and pulverized pumice stone. Then, instead of a brush-wheel and the usual method, I wash and wipe dry the plate ; take it in the left hand with the concave side up, put on three or four drops of oil—not more—then about a teaspoonful of dry plaster, and with the thumb of the right-hand rub it over the plate quite briskly, and in one minute's time produce a polish that can't be equalled with the lathe. Polish above the gums the same way, using the forefinger, full length instead of thumb. Wash the plate with soap and water, then use the alcohol to remove any remaining grease. If you try it once you will like it, as as it can be done in the time it would take to get ready for the old way."

A GOLD FILLING REMOVED FROM THE NECK.—A lady in, Tennessee had a gold filling, about the size of a squirrel shot recently removed from the side of her neck, immediately beneath the angle of the jaw. She was ignorant of the manner in which it got there, but it probably escaped from one of her teeth while while eating, and lodged in the fauces, or a fold of the mucous membrane of the lower part of the mouth, and from thence made its way to the place from which it was removed.

THE IDEAL ASSISTANT, says Dr. Kingsley, in a dental office, is a woman of education and refinement, of pleasing manners and address, interested in her vocation, and devoted to the welfare of all she is called upon to serve.

LOCOMOTOR ATAXIA WITH LOSS OF TEETH.—A case of considerable interest was presented before the Philadelphia Neurological Society. Mr. A., æt. 45, an ataxic for over five years. Nasal catarrh exists in several members of the family, including himself. He has suffered hardships. He denied having had syphilis. When 39 years of age he began to show the first symptoms of ataxia ; these were diplopia, dizziness, and a staggering gait. One and a half years later he began to have lightning pains in the extremities, and

later gastric crises. Five years ago he had transient attacks of difficulty of hearing, and this increased until he became absolutely deaf. Eyesight good until the last seven or eight months, except during the first year. Four years ago there was a loosening and a subsequent falling out of the lower wisdom teeth. No pain or discomfort preceded this, and the teeth were perfectly sound. In fact, he had an uncommonly fine set of teeth. After this his teeth gave him no trouble until about seven months ago, when the same change began in the upper jaw, causing the loss of every tooth except the right first molar, which still remains firm. The sequence of these events appears to be about as follows: First, the teeth loosen; then the gums recede, showing the alveolar processes denuded: the teeth then fall or are pulled out by the fingers, and finally the alveolar processes separate in small fragments, with slight suppuration, or are detached in larger pieces. The gum then heals. The largest piece of bone thus separated shows the sockets of three incisors, and a portion of a fourth. The teeth show no absorption of their fangs, and are almost without exception perfectly sound. About four months elapse between the loosening of a tooth and the final healing of the gum.

Abstracts of British & Foreign Journals.

BRITISH MEDICAL JOURNAL.

HARE-LIP, CLEFT PALATE, ETC.

Abstract of a lecture by THOMAS LUND, Esq., F.R.C.S.

On the subject of hare-lip, the lecturer referred to cases in which the fissure exists on one side only of the mesial line of the lip, and does not penetrate far upwards into the depth or breadth of the lip—such a case as any tyro in surgery might undertake to treat without the slightest hesitation; and yet such cases, if sought for and watched carefully, years afterwards, as the child grows up, will often disappoint the operator by the reappearance of the notch as the lip develops in the general progress of growth. Two causes conspire to this untoward result. The comparative thickness of the ex-

tre edge of the two sides of the fissure is rarely equal, so that the lip on one side of the resulting cicatrix will be thinner and less actively nourished than the other. And, from the first completion of cohesion after the operation, there will be a tendency in the lineal cicatrix so formed to undergo contraction in a longitudinal direction—that is, upwards towards the nostril. Thus, year by year, from one or both of these causes, an unsightly and conspicuous notch will be formed. To correct this, in paring the edges of the cleft in the lip, the lecturer removes, as far as possible, so much of the edge of the thinner piece as to reach a part of the lip nearly equal in thickness to the other side. This edge is refreshed at the expense of its mucous, rather than its cutaneous, surface, the thicker edge being refreshed in the opposite direction at the expense of the skin-surface. Thus, instead of two square edges being brought into contact, part of the edge of the thicker arm of the cleft lies behind or beneath the thinner, to pack it up and help to thicken it. Then the extreme edge of the lesser arm of the cleft is so refreshed as to affix to it some of the prolabial portion of the other side, crossing the extreme lower end of the cleft, and here for the time producing a very distinct nodule or projection of mucous tissue. This produces a very ugly appearance, not only as soon as the parts are brought together, but for a very long time afterwards. If the friends of the patient protest against the unsightliness of this nodule of mucous tissue projecting on the centre of the prolabium, the lecturer endeavours to allay their fears by assuring them that, if it should become permanent, it can at any time be sliced off, so as to make the whole surface level. But in a number of cases which the lecturer has watched for more than a year, and in one case for four years after the operation, this nodule of mucous tissue remained projecting in a diminishing degree, and serving as a means of blocking up what would otherwise have been a depression in the edge of the lip by the upward linear contraction of the cicatrix itself. The plan, therefore, consists mainly in leaving untouched this mucous tubercle, and being content to have the abnormal fulness or projection at this part, which in nearly all of the cases so managed

never requires to be cut off, but, in twelve or eighteen months, slowly contracts up to its proper level. The lecturer does not employ pins, except during the operation, and until all the sutures are duly fixed. Then they are removed, and a few fine sutures placed within the mouth on the mucous surface, to fix the inner flap.

The cases most favourable for closure of the hard palate in childhood or in adolescence, are those in which the bony arch of the palate is high and narrow ; and in spite of the clever procedure of Sir William Fergusson to crush in the bony roof of the palate on each side towards the fissure, and so diminish its width, yet the flaps of fibro-mucous membrane which have been detached from it, fall together much more easily, and can more readily be brought into contact from a high, than from a flat or low palate. With regard so the suturing of the sides of a cleft of the soft palate, and the importance of not drawing the sutures too tightly, it had always seemed to the lecturer that, while this was objectionable, from the chance of its producing a strangulation of the part and ulceration of the suture-holes by undue pressure, yet there was another fact to be observed in it of equal importance.

On the surface of the body, where all is clear and visible, we are apt, in tightening up our sutures, to disarrange the relative position of the edges of the wound, and to find that here and there, between the sutures, there is inversion of the skin, by which, two epidermic surfaces coming into contact, union is impossible. This may be due either to tying too tightly, or to mal-apposition. Now, an analogous condition occurs often in the adjustment of the two sides of the refreshed fissure of the soft palate in tying the sutures. What we require to have is the direct apposition of the cut surfaces on the edges of the cleft. What we often have by mis-adventure is an inversion at one or more points of the mucous aspect, which then lies surface to surface, and can never unite. An adept at this operation will rarely do this. He avoids it instinctively, perhaps without knowing it ; but the occasional operator, or he who has not had much operative experience, will often find that the edges of the cleft which he has carefully refreshed, and which he fairly hopes will unite,

cannot do so, for the reason stated. We owe very much to Sir Spencer Wells, for his valuable discovery of the readiness with which the surfaces, and not the edges, of a divided serous membrane will unite by plastic lymph in an incredibly short time. The same distinguished observer has also shown us that mucous surfaces, when so circumstanced, conduct themselves quite differently. Here the surfaces, when in contact, will not unite, but the cut edges will; so that careful attention to this little matter may prove to be one of the turning points of success.

Lastly, for those whose experience in this operation is not very great, and who desire to be secured by every means the greatest amount of rest to the sutured palate, and rapid union, and to minimise the tension on the opposed edges of the wound, of all the methods which seem to the lecturer the most simple and the best, is that practiced by Mr. Bryant, which is to make an incision into the pendulous palate by scissors or otherwise, nearly parallel to each side of the proposed line of union.

Mr. Lund then turned to the subject of cases where artificial teeth have been swallowed, the plate supporting them no longer fitting, through absorption of the alveoli. He related a remarkable case where a plate was believed to have been swallowed. Two years afterwards the patient died of pulmonary disease, and at the necropsy the lecturer laid open the œsophagus, from which the stomach had been cut away, along its entire length, until he could enter the pharynx from below. No sooner had he done this, and introduced his finger from below upwards into the mouth, than he exclaimed, "Here they are, lodged firmly on the front of the pharynx, below the tongue! I can feel the two ends of the narrow plate quite smooth and firm!" Yet it was found that it was not the plate at all. It was the two cornua of the os hyoides, felt from within the pharynx. More minute inspection with the finger, both when introduced through the mouth and carried well backwards and downwards, and then curled forwards, and when passed upwards along the œsophagus, gave quite the impression to the touch of the presence of a foreign body with smooth, firm edges. The teeth were never found, and

no one knows where or how they went. Not very long afterwards a house-surgeon made a similar mistake in an out-patient, and the lecturer was able to convince him by defining the two cornua, one on each side with a space between, and also their relations to the larynx, that within this living subject was the *ignus fatuus* of the cornua of the hyoid bone.

In all cases of asserted swallowing of artificial teeth and the plate which supports them, the surgeon must be sure that he can depend upon the declaration of the patient, and that they really have been so swallowed, for the sensation of their changed position in the mouth may be emotional or imaginary.

The lecturer described the case of a young woman who believed she had swallowed a tooth-plate in the night, and after great alarm to herself, and trouble and doubt to her surgeons, it turned out that she had never swallowed it but mislaid it, which suddenly gave rise to a false impression.

The last subject upon which the lecturer spoke was the operation for the removal of the tongue. He advocated it only for either chronic or subacute enlargement of the tongue, macroglossia, or the early advent of malignant disease.

Severe pain, however, in this complaint can often be relieved, if not destroyed by section of the gustatory nerve. This is a procedure which may with great propriety be regarded as the rule of practice for this special symptom. But as to the malignancy: if the case has advanced so far that the glands are enlarged, we can never be quite sure whether this is occasioned by simple congestion, by irritation, or by infiltrations of secondary malignant deposit. If the glands be enlarged from the latter cause, although we remove the entire tongue, little ultimate benefit results; seeing that here as in other malignant growths with secondary gland complication, unless the glands themselves be removed at the same operation, they will enlarge more rapidly afterwards than they would have done if the primary growth itself had not been touched.

It is only in the pre-glandular stage that the lecturer has seen good permanent results from the removal of the entire tongue. We may fail to find the enlarged glands if their natural size is not much augmented. They may not be per-

ceptible to touch when examined externally, either at the side or in the centre of the lower jaw. But by placing one finger within the mouth, beneath the tongue, on the floor of the cavity, and a finger of the other hand opposite to it, on the skin, a diseased condition of the glands may be thus detected which would otherwise have been easily overlooked. In doubtful cases, the best method of investigation is to slice off a portion of the growth, examine it microscopically, and let the histological evidence thus obtained decide its true nature, which the naked eye could never reach.

With regard to the particular operation which we should perform according as the removal is to be partial or complete, and next how it is to be done, the lecturer adhered to the method suggested by Mr. Walter Whitehead, and greatly simplified in his hands. Here, as in many other operations, the principle upon which an operation is to be conducted being first admitted, next come the details, and these, as laid down by him in this particular operation, should be religiously adhered to.

It is an operation which, more than most operations, must be done slowly, deliberately, and boldly ; each stage and step of the operation being completed before the next is entered upon. And then it will be found to be an operation in the performance of which, to use the words of Hilton, we may truly say, "Confiding in your anatomy, you have nothing to fear."

DEUTSCHE MONATTSCHRIFT FÜR ZAHNHEILKUNDE.

A NEW ANTISEPTIC AND ITS VALUE IN PRACTICE.

By ALEX. SCHELLER, Dentist, Warsaw.

Since the discovery of *Microbes* and the injurious part they play among mankind, pharmaceutical chemists have endeavoured in every way to discover some new method by which to destroy so universal a pest; for though so many antiseptic preparations are known to us, we still seek after new ones in which we hope to discover some peculiar properties which all others lack.

The use of these preparations has since the revolution in operative surgery brought about by Lister, enormously increased. Yet in most of the preparations in use there are great defects. Sometimes possessing the corrosive properties together with the unpleasant odour of creasote and carbolic acid, they eat into the mucous membrane. Sometimes they produce the injurious effects of salicylic acid upon the tooth tissues, then the offensive and penetrating smell of iodoform which causes in many cases bad headaches, and so proves the presence of impurities, such as bitter almonds oil, and again the dangerous poison and offensive metallic taste of the sublimate, lately so warmly recommended by Witzel, all cause us to turn our thoughts to the discovery of some new antiseptic.

Eucalyptic oil and china oil used by many dentists are so inefficacious as not to be worthy of mention.

At the meeting of the Academy of Science at Paris on 22nd Sept. of last year, a paper upon sulphuret of carbon by Ckiandi Bey was brought forward. The author had for twenty years conducted a manufactory where he was occupied in extracting fat by means of these preparations, and at the same time made many observations upon the peculiarities of sulphuret of carbon.

He remarked that contrary to the opinion in most hand-books of Chemistry, sulphuret of carbon (CS_2) is by no means insoluble in water; by shaking one can obtain a solution of 0.5 g. of this preparation in 1 litre of water. This weak solution prevents any fermentation, kills the microbes, and is above all one of the most powerful means of disinfecting, and also is found to possess a noteworthy power of penetration. The watery solution has a sweet warming taste, and produces a feeling of warmth internally; then after about three quarters of an hour a slight itching of the nose comes on, and lastly a headache, which is, however, of very short duration.

Pure sulphuret of carbon used externally is one of the strongest means of revulsion and works instantaneously. The pain caused by its use to the surface skin resembles that produced by boiling water, it ceases when blown upon, which causes the sulphuret of carbon yet remaining to disperse

immediately, and it leaves no fear of suppuration. The same effects are produced in some cases by merely inhaling the vapour as with sulphuric ether, without other after effects than a slight headache of short duration. The odour from it resembles that of chloroform.

According to the opinion of the Author the sulphuret of carbon will be of incalculable use in cases of cholera and above all in miasmatic diseases, and indeed used either internally or externally it will be very serviceable as a disinfectant in cases where sick persons must be separated as in contagious diseases. As such it ought to become very valuable in town households as it is one of the cheapest disinfectants, 20 litre of the watery solution being obtainable for one farthing. Contrary to the opinion of some hygienic professors, the Author further asserts that in his manufactory no man has ever been impaired in bodily health, although in constant contact with sulphuret of carbon all enjoying good health and many having large families.

According to Dujardin-Beaumetz the watery solution which is one of the cheapest healing means, effects in typhus an immediate stopping of diarrhoea and complete disinfection of the evacuation. As the preparation when bought is frequently not purified, it must be purified before being exhibited internally, this is best done by shaking it with quicksilver so long as any black sediment will remain.

Pelugat found that the solution of sulphuret of carbon in water was much more considerable than Ckiandi Bey supposes and gives it at 4, 5g in 1 litre, according to Rounier, however, the height will not rise above 2 g pro litre. Moved by these differences of opinions, G. Charcel and F. Paxmentier have discovered a new experiment for the determination of the solubility of this preparation, and arrived at the following results:

Temperature of the water.	Weight of one litre.
According to C.	Containing Sulp. carbon.
3.4°	2.00 g
15.8°	1.81 g
33.1°	1.53 g
40.0°	1.56 g

For the preparation of a solution of sulphuret of carbon with certain contents, Achilles Livache recommends the fol-

lowing experiment. A solution of soap mixed with naphtha, turpentine, benzine, &c., shaken well with sulphuret of carbon, whereby the transparent emulsion consists of 150 gr. of soap and 200 of the substance taken. By the subsequent dilution with water no sulphuret of carbon is separated, so that we can prepare for himself in this way solutions in the most varied kinds.

Peligat and Romier recommend the watery solution for disinfection and Reblaus and Pasteur confirm its strong antiseptic influences, and believe that it is the most effectual anti-miasmatic remedy. In a solution of sugar the sulphuret of carbon causes not the slightest irritation.

But there is no doubt that sulphuret of carbon has some properties which render it far from perfect for our use.

And first among these is the repugnant smell of the manufactured preparation, reminding one of the smell of sulphide of hydrogen, this is caused greatly by the union with sulphur, and can be considerably modified when shaken in quick-silver. When so cleansed it has a strongly aromatic smell, similar to that of a mixture of sulphuric ether and chloroform. The second property is its immense fugacity, but in spite of this, its good qualities seem so many that they outweigh the bad.

After several attempts Herr Scheller has obtained the following preparation which he uses in preference to any other antiseptic :

(1).—Pure sulphuret of carbon. This is used to cleanse the cavity after its preparation for stopping and again after it is quite dry. The volatilization is accelerated by blowing upon the surface. This will not only ensure perfect disinfection but the necessary scouring and adequate exsiccation as well. If rubber dam is used in the operation, the operator must be very careful in letting the sulphuret of carbon come in contact with it, as the former dissolves very quickly.

(2).—A watery solution containing about two grams to one litre is excellent for disinfecting purposes.

(3).—An antiseptic mouth wash ; Herr Scheller recommends the last not only against the *fætor ex ore*, but also as a remedy against caries ; for as it kills all microbes it prevents to a certain extent if not entirely the destruction of the teeth.

The mouth wash consists of spir. vin., rectific., 150,0, aq., menth, pip., 50,0, carb. sulph., 1,0. For use one teaspoonfull of this must be mixed in nine spoonsfull of water. The spirits of wine ought not to be stronger, for the sulphuret of carbon decomposes slowly in 96°/o.

(4).—A stronger solution of spirits of wine of 1 to 5 may be used for cleansing the root canal, but this must be prepared fresh every week because in mixing with strong alcohol the sulphuret of carbon will decompose immediately.

(5).—A mixture of equal parts vaseline and sulphuret of carbon is very useful in the treatment of pulp diseases as well as ulcers.

(6).—Incases of pyorrhea alveolaris and fistula of the gum a mixture of 25 parts of this preparation to 1 part iodine is excellent

(7).—It is useful to paint over a freshly uncovered or slightly inflamed pulp, as an antiseptic varnish. As well as being an antiseptic it soothes the pain and protects the pulp from injury from without and consists of equal parts mastic and sulphuric æther with the addition of 2 proc. C. S.₂.

Herr Scheller is of opinion that sulphuret of carbon will soon take a very important place in general surgery and repeatedly recommends it in therapeutics as a means of curing all miasmatic diseases, also as a means of revulsion in cases of inflammation of internal organs, lastly as one of the best and cheapest disinfectants.

REVUE ODONTOLOGIQUE.

ECOLE DENTAIRE DE FRANCE.

THE HYGIENIC CARE OF THE MOUTH.

A Clinical lecture delivered by DR. ANDRIEN, President of the Odonto-Technique Institute and Clinical professor at the Ecole Dentaire de France.

The subject is treated under two heads, the care bestowed by the dentist, and second, that by the patient himself.

Under the first heading are arranged the cleansing and examination of the mouth. It is insisted upon that thorough cleansing is insufficiently attended to and this neglect leads to an inaccurate diagnosis by inspection. Patients suffering from stomatitis or gum trouble, frequently are treated upon

general principles, the true origin of the trouble being overlooked, simply because the mouth is not examined. Astringents, when used without the removal of tartar, lead to an exaggeration of the diseased condition. The tartar which gives rise to this chronic gum trouble and finally to the loss of teeth is composed of carbonate of lime, mucous and mouth parasites, viz., leptothrix, buccalis, oidium, albicans, leptomitosis, vibrios, and spirilla, certain infusaria such as volvox. This tartar varies in colour and consistence, it white, yellow, brown, and even black. When white, it is soft; when black, it is hard. Tartar is saturated where the salivary glands open and where least masticatory effort takes place and thus persons who habitually use one side of the mouth more than the other get tartar deposited on the less used side. Tartar varies immensely in the quantity present—it may even attain the size of a pigeon's egg. In dealing with it, the dentist has to employ three processes, scraping, polishing and brushing. The method of accomplishing these are then described, it being insisted that a definite order be always pursued which obviates teeth being overlooked. Certain precautions are then suggested. In scraping the lingual surface of the lower teeth, it is best to avoid any cutting and to use the pulp of the ring finger as a resting point, it being placed on the cutting edge of the teeth should they be firm. In the event, of these being loose, however, the index or thumb of the left hand is placed on the lip and labial face of the teeth and used as a point of resistance. In the latter case, in order to avoid pulling the teeth out by accident, it is well to support them with the pulp of the left hand index finger, placed on the cutting edge, while the left thumb rests on the chin. In scaling the labial surface of the lower teeth, it is best to use the thumb of the left hand placed between the lip and the teeth, while the other fingers are placed below the chin, thus steadying the ring finger. By this manoeuvre the lower lip is kept well out of the way. In attending to the teeth of the upper jaw, or lower molars the lips must be carefully kept out of the way, all roughness being avoided, this can be done by the thumb or forefinger of the left hand or by a mouth mirror or spatula. To scaling succeeds polishing. This being

accomplished, cleansing by means of a brush has to be performed. A common tooth-brush moistened and dipped in powdered chalk is recommended—by preference one of a circular shape. It is important in executing these manœuvres to avoid injuring the gums which must ensue with anything like rough usage. The patient is directed to rinse his mouth frequently.

Literary Notices and Selections.

THE REMOVAL OF STAINS FROM THE TEETH CAUSED BY THE ADMINISTRATION OF MEDICAL AGENTS AND THE BLEACHING OF PULPLESS TEETH.*

By A. W. HARLAN, M.D., Chicago, Ill.

* Read in the Section of Oral and Dental Surgery of the American Medical Association, May 1884.

GENTLEMEN,—A large number of remedial agents administered by physicians temporarily stain the teeth, but in looking over the list I find there are but few which may be said to permanently stain them. The mineral acids—nitric, sulphuric, hydrochloric, and other acids of this nature, if used for any length of time, may discolour the teeth, and likewise have a deleterious effect on them; yet it cannot be said that such agents stain the teeth so that any particular method should be desired for restoring their natural appearance. The vegetable series may likewise be dismissed. The tannates and astringents generally do not permanently stain the teeth. The muriated tincture of iron, and in fact all the ferrum preparations, with the single exception of ferrum dialysatum, do stain the teeth; yet it is comparatively easy to remove such stain, by the use of dentifrices and tooth pastes, when of recent occurrence. Occasionally it may be necessary to polish the teeth with wooden or leather points charged with finely pulverized emery or levigated pumice; following these, powdered Arkansas stone and precipitated chalk, incorporated with a thick solution of white Castile soap, should be used. The stains produced by hydrastis, aloes, tobacco, rhubarb

ink, infusion of saffron, *pinus canadensis*, carmine, catechu, hydriolic acid, tincture of iodine, and kindred agents, are of temporary duration in nearly all cases. Not so with tobacco, when the enamel has been fractured, or the masticating surface of teeth have been deprived of their enamel by wear. In such cases there is no remedy for the stain, when it disfigures, except to cap the teeth with gold. This last condition it is seldom found necessary to treat, as in such cases generally it is only imperative when the ends of the teeth have become sensitive to thermal change. Staining of the teeth as a result of age, it is not the province of this paper to treat. The single substance, which I have found to stain the teeth permanently, is nitrate of silver. Solutions are frequently used in the mouth and throat of too great strength. Many times the powdered nitrate is used to dust diseased mucous membranes, and the teeth then suffer. Occasionally dental surgeons use the solid stick on the walls of sensitive teeth, and also to arrest incipient caries. When carelessly used it may stain other teeth than those operated upon. These cases are the ones we are called upon to treat. It matters not how the stains are acquired, they must be removed, and no amount of polishing, without injury to the external surfaces of the teeth, will remove such stains. The agents which may be used for removing such stains are not numerous. Cyanide of potassium, iodide of potassium, tincture of iodine, and the liq. amm. fortior are all recommended. There are other substances which may be used to remove fresh stains, notably solution of chloride of sodium, if used immediately. I recommend as the neatest, safest, and most certain method, the adjustment of the rubber dam; then dry the teeth, and paint three or four of them with the compound tincture of iodine, allowing it to dry; then moisten the surfaces of the teeth with the stronger liquor ammonia for two or three minutes, and wash the surfaces with peroxide of hydrogen. The stains will have disappeared in consequence of the chemical change having taken place, resulting in the formation of iodide of silver and nitrate of ammonia. The teeth should then be polished in the usual manner.

BLEACHING TEETH.

It is not intended that a history of the various methods of bleaching teeth in use should be presented for consideration at this time ; but it is necessary to remark that most of them are faulty and very few useful in all cases. In order to bleach a pulpless tooth the operator must first fill the tooth at least one-third its length. All decay should be removed and the fragments of the pulp in the fine angles of the outline of the living pulp should also be removed. Discoloured dentine if hard need not be cut away. With the rubber dam adjusted over the adjacent teeth, including the one to be operated upon, the cavity is thoroughly washed with H_2O_2 repeatedly and then carefully dried by using the hot blast from a powerful bulb syringe. A small quantity of chloride of alumina is placed within the cavity, and it is moistened with peroxide of hydrogen and allowed to remain five minutes. The deliquesced Al_2Cl_6 is carefully washed out of the cavity with a clear solution of sodæ biboras $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$, and the cavity thoroughly desiccated. In the vast majority of cases the tooth will have returned to its normal colour. The cause of the change in colour is owing to the complete oxidation of the infiltrate into the tubules, and the destruction of the staining of the contents of the tubules. The tooth should not be bathed in creosote, carbolic acid, alcohol, or any other substance capable of coagulating albumen. Where the operator has reason to suspect that any such agent has been introduced into the cavity, it should first be washed with the clear solution of sodæ biboras, and then followed by the above-mentioned method. The rapid liberation of chlorine from Al_2Cl_6 in the presence of H_2O_2 , resulting in the formation of HCl and H_2O , leaving unsatisfied O and Cl accounts for the speedy destruction of the colouring matters within the pulpless tooth. In order to maintain the colour an oxy-chloride of suitable colour should be used to fill the remainder of the pulp canal, and as large a portion of unfilled cavity as judgment will indicate; thirty to fifty minutes should be given for the hardening of the oxy-chloride. The cavity should be filled with gold immediately. It is not wise to allow saliva or other liquid to come in contact with

the oxy-chloride after it is introduced into the tooth. It jeopardises the permanency of every case when oxy-chloride becomes moist, on account of the speedy absorption of fluids by the freshly hardened filling.—*Dental Register*.

WHO ARE DENTISTS ?

By J. A. ROBINSON.

(Continued from page 523.)

We have thus far only considered the dentist as a mechanic and artist. Let us now try and look at him in a more practical point of view, and, as some think, a higher,—in the capacity of physician and surgeon of a specialty. It is not a fiction of fancy to say that a man is not a dentist unless he is master of his whole calling, and that relates to the cure of the diseases of the mouth, and remotely to the whole system. The surgical operations in the mouth, and especially those on the teeth, are in the main simple, when well understood, though sometimes difficult to perform : but they are all-important in their relation to the well-being of the whole physical man. You will observe how closely the physician is allied to the artist and the scientist in the diagnosis of his cases ; and the surgeon to the mechanic and the philosopher. This higher calling is growing upon the profession day by day, as the profession is growing in the community.

Perhaps it may not be out of place, and I may be allowed to digress far enough at this time, to suggest a few things that seem to me to be fundamental to our very existence and standing, and as essential to securing acknowledgement in this nineteenth century civilization.

If the education and culture of the children are essential to the well-being of the government, the physical system is essential to the man ; and to conserve it is the work of the physician, the surgeon, and the dentist. Hence, as we have to live, the care of the teeth seems to be of fundamental importance. It will no longer be necessary to extract the teeth when parents can be impressed with the fact that they are essential to the health and well-being of the child ; and since we have the aluminium disc and the corundum powder, it seldom becomes necessary to fill children's teeth on the ap-

proximal surfaces, if taken in season, as the decay is readily polished off on the "Arthur plan." This method is particularly applicable to the posterior molars of the first dentition and to the anterior surfaces of the first molar of the permanent set, and I have no doubt that it is better practice in incipient decay than to incise by drilling, as is often practiced in shallow cavities. For many years I have practiced the Arthur plan in inferior bicuspid, and often in superior, with great satisfaction. The painlessness of the operation will never disturb the child, and that is very important in the treatment of the young.

The most desirable attainment to be reached is the *painless operation*. Something needs to be discovered that will bear the same relation to removing decayed dentine and highly inflamed bone-tissue that anæsthetic agents do to tooth-extraction. This being found, there will be more frequent examinations and operations with advice from the dentist, because there will be less dread of pain. The most effective agent I know for this purpose is composed of equal parts, by weight, of caustic potash and carbolic acid, braided together into a crystalline paste, and applied to the cavity before the cutting it commenced, and then again after the loose decay has been removed. If you desire it less pungent the quantity of caustic potash may be reduced, or you may wipe it out with carbolic acid. The pain, which is very slight at first, soon passes away, and then the cutting is painless. My theory of the action of this medicine is, that the application coagulates the fluid in the tubuli, and renders it capable of transmitting sensation to the nerve in the pulp, but does not destroy it. Both these agents are antiseptic, and both escharotic, but the acid and the alkali combined form a salifiable base that is perfectly harmless to bone-tissue, and gives almost immediate relief to that most disagreeable of all feelings caused by preparing cavities for filling. If the pulp is exposed, the slough is removed almost instantly, and an eschar is formed so delicate that it heals by first intention, and when that is covered with any of the oxyphosphates now in use the vitality of the pulp is preserved and the tooth is saved.

(To be continued.)

THE UTILIZATION OF WASTE SCRAPS OF OLD AMALGAMS AND BY-PRODUCTS OF DENTAL PRACTICE.*

By PROF. CHAS. MAYR, Springfield, Mass.

During a practice of only a few years there accumulate in a dentist's office all kinds of scraps, mostly consisting of old amalgams, plugs, etc.; they are a small affair in themselves, but so long as dentists pay \$2.00 and over for an ounce of alloy, it is worth while to give five minutes' attention to a box of amalgams containing perhaps five ounces. If there is nothing but amalgams in the scraps, I think the most legitimate use to be made of them is to remelt them, to drive off the mercury, to file them, and use them again. Many dentists use only one kind of amalgam; by properly conducting this process they may get as good amalgam as the original; the best way to proceed is about this:

Put the scraps into a Hessian crucible; add for every ounce of amalgam half an ounce of cyanide of potassium; beat at a dull red heat for a couple of hours in a good draught, and pour the resulting metal into an ingot; it gives a cleaner product if during the process the crucible is covered.

This ingot may be filed and will be found to give as good amalgam as the original; it is important that the heat should not be too high, otherwise some tin will volatilize, and thereby the proportion of the metal will be altered.

The cyanide of potassium is an excellent flux, because it melts at a low temperature, and excludes every trace of oxygen. If the operator does not care to recover amalgam in this manner, he may extract the precious metals from the amalgam in the following manner:

The old scraps are melted, with access of air, in a strong draft at a temperature at which silver melts. Almost all the mercury is thus driven off, and a considerable amount of the tin oxydizes; the resulting mass is granulated by pouring it into water and then dissolved in nitric acid which oxydizes the tin and silver, and because commercial nitric acid almost

* Extract from a paper read before the Connecticut Valley Dental Society,

always contain chlorine, so some of the gold ; the greater part of the gold, however, remains undissolved in combination of oxide of tin. After the oxidation has ceased, a powder will be found floating in the liquid varying in colour from white to violet ; white, if no gold is present, and coloured the more the greater the amount of gold. The turbid solution is diluted with water, say to five times the original volume, it is set aside for a couple of days, and then the almost colourless liquid on the top carefully poured off. This liquid contains usually nothing but silver and copper ; to precipitate the silver it is poured into a solution of salt containing about half an ounce of salt for one ounce of amalgam white curdy precipitate is obtained which is chloride of silver ; by gently shaking, it can be made to cling together and to settle rapidly to the bottom ; the liquid is decanted, the precipitate washed once or twice, collected on paper, allowed to dry, mixed with about twice its bulk of black flux, which is nothing but soda and flour mixed in equal proportion. This mixture is put into a sand crucible and melted at a bright heat. A globule of pure silver is thus obtained at the bottom of the crucible, which may then be utilized further. To recover the gold, the violet precipitate from which the first solution of silver was decanted is washed a couple of times by decantation ; it is then treated with a mixture of hydrochloric and nitric acid, about one ounce for every ten ounces of amalgam ; its colour will disappear and a yellow turbid liquid result. This is diluted, allowed to settle, decanted and mixed with a solution of common sulphate of iron (copperas), impure gold is precipitated as a bluish powder, it is collected on a filter, melted in a clay scorifier with a little saltpetre and repeatedly dissolved and precipitated.

In this way alone the gold can be completely freed from the tin ; the oxide of tin obtained during this process may be dried, and is the commercial putty powder.

I know that these things are simple, have been told often, and contain little new ; but perhaps some one has not yet heard of them, and, if so, this will have been sufficient inducement for me to give this synopsis.—*Archives of Dentistry.*

A DISCUSSION OF SOME QUESTIONS IN DENTAL
CARIES.

By W. D. MILLER, Berlin, Germany.

(Concluded from page 571)

Dr. Miller then resumed the discussion, saying:— I have a few remarks only to make regarding the inflammatory theory of decay, as I have previously clearly stated my views on this subject. Every practicing dentist must be impressed with the fact that there are very many peculiarities connected with caries of the teeth which directly contradict the idea of inflammatory action, and there are none as yet definitely established which agree with it. At the last Saratoga meeting, it was said that Dr. Miller had forgotten that there is a large amount of organic matter in the teeth, a very erroneous statement, as I have never lost sight of the fact for an instant, nor of the fact that there is also much organic matter in nails, hoofs, wool, feathers, etc. We need other evidence than this, before we can call caries an inflammatory process.

Again, the mere detection of swelling or tumefaction of the dentinal fibrils is no evidence that caries is the result of inflammatory action. The custom of certain dental pathologists to assume that every variation from the normal detected in the tissue is of an inflammatory nature, is about as rational as it would be for the general histologist to ascribe the many post-mortem changes which take place in delicate tissues, while being prepared for examination, to inflammation. Experimenters have long ago shown that such post-mortem changes may take place in dentine, and I have produced them artificially. When Dr. Bodecker was in Europe, he examined a number of my preparations, and, in one instance in particular, he called attention to the absorption territories and swollen fibrils not knowing that he had a case of artificial caries before him. He was much surprised on being told so, and said that I had "saved him an immense amount of labour."

I do not say that changes of an inflammatory character may not take place in the dentinal fibrils, as a result of the action of the caries-producing agents, or in connection with inflammation of the pulp. Indeed, it would be strange if the acids penetrating the dentine and bathing the fibrils did not produce some change in them. But it remains to be shown that in either case these changes either produce caries, or accelerate the process when once established.

I have no prejudice whatever against the inflammatory theory of decay. On the contrary, I would gladly welcome it if it could be shown that there is at least a trace of truth in it. But at present there are too many and too great obstacles in the way. To say nothing of the facts that in caries the cardinal symptoms of inflammation are all wanting, that it is impossible to produce caries by those means which invariably produce inflammation of other tissues, that caries attacks pulpless and dead teeth as readily as living ones, and that caries can be produced artificially—aside from these facts there is not a little evidence which points to anything but inflammation as the cause of caries.

Anyone who has given time to the study of inflammation, particularly of bone or cartilage, will at once be impressed with the fact that there is not the slightest trace of similarity between it and *caries dentium*. Furthermore, the action of different colouring matter upon carious dentine furnishes information of considerable interest. For example: Picrocarmine colours the simply decalcified, otherwise unchanged basis substance pink or red, while the distended tubules and the round or oval caverns filled with the debris and fungi (called by Abbott medullary elements), are stained yellow. This reaction is in marked contrast to that with pulp tissue, periodontium, bone, cartilage, etc., where changes of a truly inflammatory character have taken place.

Again, the so-called medullary elements are found in dead as well as in living teeth, and mostly in the outer layers of carious dentine which have lost all vitality, and cannot therefore be subject to inflammation. The deciding test for the correctness of any theory of caries is the possibility of its application in the direct production of caries, and if any advocate of the inflammatory theory can produce a speck of carious dentine as big as the point of a pin, within the next ten years, the inflammatory theory will be entitled to more consideration than it now merits. As stated above, I am ready at any time to acknowledge inflammatory action as an agent in the production of caries as soon as a single definite proof has been established in its favour. In a following number of this journal I shall consider the "toxic agents" formed by certain of the micro-organisms of the human mouth.—*Independent Practitioner*.

British Journal of Dental Science.

No. 420.

LONDON, JULY 15, 1885.

VOL. XXIX.

EPITHELIOMA OF THE TONGUE.

By FRED. BOWREMAN JESSETT, F.R.C.S., Eng.

Surgeon to the Cancer Hospital, Brompton.

Continued from page 585.

The action of drugs, therefore, must not be depended upon, and if in a questionable ulcer, possibly syphilitic or tubercular, you determine to try the use of specific treatment do not waste more than ten days or a fortnight, at the end of which time if the ulcer shows no disposition to heal, you must at once have resource to operative measures and remove the diseased part freely, being careful to cut well into the healthy tissues. And here let me lay down one hard and fast rule, never on any consideration allow yourself to make use of caustics of any kind, as they are utterly and absolutely useless, in fact by their irritation often do harm and never any good.

From what I have already said it will be seen that epithelioma of the tongue if left alone will extend, sometimes very quickly, at others more slowly, but always surely, into the whole substance of the organ and surrounding parts, and early attacking the submaxillary and cervical glands, and so surely destroying life in a comparatively short time. I however, regard the disease as a local affection so far as it does not, or very rarely, attack any other organ in the body, and I therefore consider if the disease is removed early enough and thoroughly there is little chance of its returning in the site of the cicatrix, although possibly the lymphatic glands may be already affected. This is corroborated in practice, as I have seen several cases in which a diseased mass has been freely removed when at the end of a twelvemonth or two years there has been no return whatever. Mr. Butlin, in his work, has recorded a number of cases where the patient was apparently perfectly free from the disease at

periods varying from one to four years after the operation, and in all these cases careful microscopical examinations were made and the disease demonstrated to be undoubted epithelial cancer.

In advanced cases, where the probability of freeing the patient from disease is very small, or practically hopeless, even then by removing the filthy sloughing mass the patient's life may be prolonged, and certainly his latter days may be made very much more comfortable, as the wound in these extreme cases heals quickly and well, and instead of a large, sloughy, stinking mass, the patient is enabled to take his nourishment with comfort, and converse far better than before the removal of the disease.

It will be well here to enquire into the mortality after the operation of removal of the tongue either in part or as a whole, for this purpose I have collected all the cases I can find recorded in the medical journals and from other sources, and compared them with results of 50 cases occurring in the practice of the Cancer Hospital during the years, 1882-3-4.

Table of Deaths after operations for Removal of the Tongue by all Methods.

	Medical Journals.	Mr. A. E. Barker	Dr. Gross	Dr. Schâpfer	Univ. Col. Hospital.	The Cancer Hospital.	Total.
No. of cases	43	218	244	50	21	50	626
Died	13	35	56	11	8	8	131
Death-rate	30.2	16.9	22.9	22	38	16	20.9

From the above table it will be seen that the death-rate is somewhat high, but in this table it must be understood that all cases are included, and many undoubtedly were operated upon simply as a palliative measure to free the patient from the loathsome disease which filled his mouth, and also to relieve the excruciating agony which many must have suffered from. Such was the case in those recorded from the Cancer Hospital several undoubtedly died directly from the result of the operation either from secondary hæmorrhage or septic pneumonia, the former surely a preventable cause, and the latter one, which experience teaches us to escape to a much greater extent than heretofore. In dressing the raw surface formerly I trusted entirely to washing the mouth out after the operation with a solution of perman-

ganate of potash, or chlorate of potash, now, however, iodoform is freely sprinkled over the wounded surface and the mouth washed repeatedly with boro-glyceride or a weak solution of carbolic acid. Formerly I strictly forbade the patient taking nourishment by the mouth for at least four or five days, he was fed during that period entirely with nutritive enemata, with the result that he lost strength during these few days and therefore ran much greater risk of contracting a low form of pneumonia. Now, I invariably feed my patients at once through the stomach by means of a simple contrivance of an ordinary gum elastic catheter, to which is attached by means of a piece of elastic tubing a small silver funnel, this catheter is easily and without the least pain or even discomfort passed into the œsophagus and beef tea, eggs whipped up in milk, conveyed readily into the stomach without coming at all into contact with the wounded floor of the mouth. This contrivance is so simple that a nurse can easily adopt it after being shown once or twice, in fact the patient after a few days passes the tube for himself. Under these improved methods of after treatment I have no doubt whatever that the death rate of operation for removal of the whole or a part of the tongue will be very much less than they hitherto have been.

Operations.—I will now pass on to describe the different operations which have been practiced for removal of the tongue or a portion of the organ and will compare the results of the operation by different methods, and then endeavour to arrive at some conclusion as to the best procedure to be adopted in different cases.

It is only of late years that surgeons have undertaken to remove any considerable portion of the tongue, and some have been surprised to find how free from danger the operation was, and how speedily and distinctly their patients speak after having lost a great part of that organ. The late Mr. Fairlie Clarke, in his work on diseases of the tongue collected some interesting cases, in which the tongue was cut out as a punishment or had been otherwise lost. He says: "In A.D. 484, about sixty Christian confessors, of Tipasa, a mountain colony on the North Coast of Africa, had their tongues cut out by order of Huzmeric, the Vandal conqueror; but within

a short time some at least of them were able to speak with such distinctness that it was accounted a miracle, and it was supposed to be a signal mark of divine favour, that men who had been deprived of their tongues could still go about preaching. Even Newman, in his "Essay on Miracles" maintained this view: "We find that in the middle ages it was no unusual thing to condemn persons who had made an unwelcome use of their speech to have their tongues cut out. The Bishop of Caithness was treated thus in A.D. 1201 for venturing to intercede with Harold for the lives of some prisoners. Again, the ordinances of Louis IX of France condemned perjurers and blasphemers to have their tongues burnt with a red hot iron, while Languis of Lemburg records that in Germany, Italy, and Spain, similar culprits were punished by having the tip of the tongue cut off, the first step in the execution of the sentence being to nail the offending member to a tree. The case of Pope Leo III, which is narrated by Milman, is another instance of a somewhat similar mutilation, the recovery from which came in process of time, to be reckoned a miracle. I am also indebted to Mr. Twisleton for having drawn my attention to the account of some French Protestants who in the middle of the seventeenth century were condemned to have their tongues cut out before they were led to the stake. One of them, immediately after the operation repeated three times, 'Le nom de Dieu soit bènì.' In another instance the martyrs spoke so distinctly that the executioner was accused of not having carried out the sentence." Mr. Clarke narrates other instances of the same description, but the above are enough for the purpose of showing with what little danger the removal of the tongue is attended even when practiced in the rough and ready manner by the executioner, also how little the speech is really affected by its removal.

The first case I can find of removal of the tongue by surgeons was as early as the year 1658, but it was not until the commencement of the present century, viz., 1805, that the operation was performed in any definite form, when Inglis attempted to strangulate the diseased part by means of a ligature passed round it, the ligature being kept in position

by means of pins which were made to transfer the tongue behind the disease. In 1827, Major split the tongue down the centre and applied a ligature around the diseased half with the same object. In 1831 Jaeger suggested and practiced dividing the cheek with a view of getting more room and enabling him to get well behind the disease. In 1833 Morault introduced the preliminary ligature of the lingual artery. In 1836 Roux first introduced the division of the lower jaw and lip in the middle line. This method was afterwards adopted by Sédillot in 1844 and Syme in 1862. Then in 1865 Langenbeck divided the lower jaw opposite the first molar tooth in order to gain free access to the side of the mouth for the removal of the tongue glands and part of the palatal arch and tonsil. In 1838 Regnoli opened the floor of the mouth from below by an incision from the middle of the hyoid bone to the chin, ending in another semilunar incision along the border of the jaw, the tongue being drawn down through the opening and removed. Billroth modified this operation in 1871 by extending the lateral incision and uniting the central one in the middle line. In 1854 Chassaignac suggested the *écraseur* passing the chain through an incision above the hyoid bone, and in this year also the galvanic *écraseur* was used by Middeldorf. In 1866 Nunnerly first adopted Chassaignac's method in this country.

In 1877 Mr. Whitehead, of Manchester, first removed the tongue by means of the scissors, tying the lingual artery as he divided it, at the same time perfectly independently, Billroth suggested removal of the tongue by the same method but first ligatured the lingual artery by the ordinary operation.

In 1880 Kocker adopted a method of opening the mouth from behind and below the angle of the jaw to reach the base of the tongue and remove with it the tonsil, soft palate, or any other parts that may be affected. This operation has the further advantage that by the external incision all glands that may be enlarged is affected can be removed.

Morrant Baker has lately re-introduced the plan of splitting the tongue, removing either half with the *écraseur*. He also places a ligature around the portion last in the loop, as he finds the lingual artery is always to be found there.

Mr. A. E. Barker, in extensive operations, suggests that tracheotomy or laryngotomy should always be performed before the removal, and Trendelenburg's tracheotomy tampon canula be used. He afterwards plugs the pharynx with a large sponge, with a string attached to prevent any blood getting either into the stomach or larynx. He thinks by this method there is less risk of septic pneumonia following the operation.

In all ordinary operations the back of the mouth can be easily plugged with sponges without tracheotomy being performed.

To Chassaignac we owe the introduction of the *écraseur*, and it was not until this instrument was brought to the notice of the profession that surgeons dared to remove the tongue through the mouth without an external wound. It is to the relative merits of removing the tongue by this method, as compared to removal by scissors, that I wish now to draw your attention.

The operations most in vogue for removal of the tongue at present may be divided into three groups, viz., by the wire or chain or galvanic *écraseur*; either by unilateral or bi-lateral ablation *i.e.*, by the knife or scissors; and, lastly, those cases in which, from the extent of the disease, more extensive operations are required, such as Symes's, Regnoli's or Kocker's.

To arrive at some kind of conclusion as to the best method to adopt in excision of the tongue, I have collected from the medical journals all the cases I can find reported for several years. I have also communicated with Messrs. Barwell and Gant, who advocate the use of the *écraseur*, with Mr. A. E. Barker, who advocates the performance of tracheotomy in many cases before removal, and with Mr. Whitehead, who was the introducer of in this country of the use of the scissors. I have also collected and examined the records of the cases that have been operated on at the Cancer Hospital during the last two or three years.

The results of my investigation are not so satisfactory as I could wish, but still much may be gathered from them.

(*To be Continued.*)

COMPARATIVE DENTAL PATHOLOGY. INJURIES AND DISEASES OF THE JAWS IN ANIMALS.

By J. BLAND SUTTON, F.R.C.S., Eng., Lecturer on Comparative Anatomy, Middlesex Hospital Medical School.

(Concluded from page 592.)

Exostoses.

The Museum of the College of Surgeons contains among its treasures the superior maxilla of a codfish with a large, disk-shaped osseous tumour growing from it. The growth measures two inches in transverse diameter, and half an inch in thickness, and is made up of hard compact bone.

The same collection also contains the dentary bone of a pike with an exostosis attached to it, which has displaced two of the teeth inwards. The growth, which is finely spiculated, springs from the margin where the teeth are attached.

It seems that the jaws are favourite seats of exostoses in animals as in man. There are several cases recorded in horses. In one case a tumour weighed twenty-one ounces, and grew by a narrow peduncle from the septum nasi, but the mass of the growth was lodged in the antrum.

In another well-recorded case, an exostosis growing from the premaxilla of a horse, displacing the incisor teeth, was safely removed from a three-year-old colt. It weighed five ounces. In both these cases the growth exhibited under the microscope the structure characteristic of true bone.

The occurrence of cartilage tumours and exostoses in connection with the bone, and especially with the maxillæ, are facts of very considerable interest, for there are many cases recorded in man and in animals. The embryological history of the face affords a very satisfactory explanation as to their probable origin.

In 1875 Virchow showed that in the bones, islands of cartilage which remain untransformed in the general ossifying process may later in life become the starting point for the formation of cartilage tumours. It may also be conceded that the "islands" may also be the starting point for osteomata, as these tumours are but a further development of

cartilage ; growing exostoses are always covered with a cap of cartilage.

The conception may easily be applied to the jaws. If at the tenth week of intra-uterine life the investing tissues of the face be carefully teased away, or better still, if the parts be divided by a series of vertical sections carried through the skull and examined in detail with a lens, it will be observed that a pent-house shaped piece of cartilage passes from the trabecular region of the skull and terminates at the tip of the nose. This layer of cartilage is known as the fronto-nasal plate, and it is supported by the median ethmo-vomerine plate. As development proceeds, the nasal palate and superior maxillary bones develop in the perichondrium, and by their pressure cause atrophy of the underlying cartilage. The ethmo and inferior turbinals develop in the scroll-like pieces of cartilages. The only part of the fronto-nasal plate left in its original cartilaginous condition in the adult is that which forms the lateral and sesamoid cartilages of the nose. The vomer arises in the perichondrium of the ethmo-vomerine, and by its pressure causes the adjacent cartilage to disappear ; bone is deposited in the upper portion to form the perpendicular plate of the ethmoid with the crista galli, whilst the extreme end maintains its original condition, and is recognised in the adult as the triangular cartilage of the nose. Two little plough-share-shaped pieces of cartilage are also retained on either side of this septum, immediately over the anterior palatine canals, to support the structure known as the "organ of Jacobson."

Seeing then, that cartilage enter so largely into the formation of the face,—persists in places even throughout life,—we have not far to seek for "cartilage islands," which may germinate under favourable conditions in cartilage or osseous tumours.

In the lower jaw, that portion of the bone anterior to the mental foramen is developed in Meckel's cartilage. Patches of cartilage are also very frequent at the angle of the maxillæ.

It is a curious but significant fact, that of all parts of the jaw the symphysial region and the angle are by far the most frequent seats of enchondromata and osseous tumours.

Sarcomata.—It is necessary to observe great caution in drawing conclusions as to whether sarcomatous tumours recorded as growing from the jaws of animals are really of this nature. Very many tumours said to be sarcomata, or osteo-sarcomata, were no doubt in the majority of cases really examples of actinomycosis, a disease tolerably frequent in horses and cattle.

There are some cases, however, which do not admit of any doubt.

The "Veterinarian," 4th series, Vol. XXIII, contains a well-recorded case springing from the nasal surface of the superior maxilla of a horse. Microscopically it was found to be composed of small round cells, with a few spindle-shaped cells intermixed.

Mr. Lediard has recorded, in Pathological Society's Transactions, Vol XXXV, a case of sarcoma affecting the lower jaws of a horse. The maxillæ near the symphysis on both sides are hollowed out into a large cavity, the walls of which are very thin, and the teeth displaced.

Actinomycosis.

Bollinger, of Munich, was the first to draw serious attention, in 1877, to this remarkable disease as met with in cattle, and Dr. Jas. Israel, of Berlin, noted its occurrence in man in the following year, 1878. But an Italian, Rivolta, had previously published a description of it as "fibrous sarcoma," in *Il Medico Veterinaria*, Turin, 1868. There is no doubt that the affections previously described by veterinarians as wooden tongue, spina ventosa, tubercular stomatitis, scirrhus tongue, osteo-sarcoma, &c., were in the majority of cases actinomycosis.

This disease may be defined as an inflammatory affection occurring in man, cattle, and swine, and characterised by the formation of nodules composed of cells surrounded by fibrous tissue, accompanied by suppuration set up by a certain fungus known as the actinomyces, or "ray" fungus.

The disease is especially frequent in cattle, and consists of small nodules which appear on the upper or lower jaw, the tongue, pharynx, œsophagus, intestines, or even in the lungs.

It is especially frequent in the jaws, and invades bone, muscle, mucous membrane or skin.

When the disease attacks a bone the growth has the appearance of a sarcomatous tumour. It often commences in the alveoli, extending thence into the mouth, and spreads through the cancellated texture of the bone, giving rise to abscesses and fistulæ.

There can be little doubt that the numerous reported cases of sarcomata occurring in the jaws of cattle are really, in the majority of instances, examples of actinomycosis.

The bones in these cases, when macerated and dried, present the curious hollow expanded condition which used to be familiar to surgeons as *spina ventosa*, and present the same characteristic spongy condition, resembling pumice-stone.

The Actinomyces.—The true botanical position of the fungus has not been determined. When one of the soft yellow-coloured globular tufts is examined under the microscope with a low power it presents a radiate arrangement. When properly prepared, as by staining with Spiller's purple and examined under a high power, they will be found composed of a kind of capsule of fibrous-looking tissue, having inside this a collection of cells looking something like lymphoid cells; approaching the centre the cell gets larger, and occupying the middle of the mass is the cluster of actinomycetes, presenting an appearance described by Ziegler as that of a "tufted rosette of radiating pyriform or club-shaped structures." These club-shaped structures are regarded as the conidia of the fungus.

When fully developed the tuft has an appearance resembling that of a mulberry. The centre is regarded by some as a mycelium, and the radiating tufts as the conidia.

When the fungus settles in a tissue it gives rise to inflammation, and while the spore is developing its mycelium an inflammatory nodule forms around and has very much the look of a tubercle. Recent nodules contain round cells, older ones giant cells, and old nodules are often calcified.

Small nodules may become confluent and give rise to a tumour of the size of an orange, but their tendency to break down and suppurate. Hence large masses always contain pus cavities and are riddled with fistulæ.

Ætiology.—We are not in possession of satisfactory evidence as to the way in which the actinomyces gains entrance to the tissues. In all probability it enters in the form of spores through wounds or abrasions of the buccal cavity, such as those left after the extraction of teeth. The fungus has been discovered in the lachrymal sac, and in the cavities of carious teeth.

If the disease does not affect any important organ, and is in a situation where it can be completely removed, recovery may follow ; but if treatment be neglected, the disease extends, involves internal organs, and ends fatally. In animals it is nearly always a fatal disease.

ENAMEL AND PORCELAIN FILLINGS

By ROBERT MARSTON, Leicester.

I notice in your May journal the conclusion of an article on "Enamel and Porcelain Fillings" by Mr. William Herbert Rollins. That article distinctly shows : Firstly that Mr. Rollins is a practical authority on this subject. Secondly, he is actuated by a noble principle as is evinced by the generous gift of his formula, which when all things are considered, may in the aggregate have cost him an almost fabulous sum. Commencing with the art and mystery of heating up a large pot (crucible) without bursting it, which by-the-bye, is a simple enough matter when understood, but the experience of which necessary to its achievement is nevertheless likely to incur an incredible expense, going through the testing of formulas given by authors apparently totally ignorant of their practical value, finally, breaking free from the prejudices which for a time trammel the mind and continuing a course of costly experiments, ultimately discovers the object sought. This may have been his routine, the expense, tedium and disappointments of which greatly enhance his generosity, as shown in giving so freely that which cost so much. Mr. Rollins undoubtedly sees in porcelain the ideal filling, possessing as it does, all the desirable qualities, viz., transparency, natural colour, unequalled hardness, contour characteristics, non-contractiveness, non-

expansiveness, insolubility, and illimitable durability. He probably sees in it too, an unrivalled substitute for the natural gum. As by proper treatment it may be made to rival in appearance the living tissue. A few, simple, well-directed touches are sufficient to reproduce the characteristics peculiar to the case. A few grains of inert pigment sufficing to produce all the colours, viz., pure red, yellowish red, and purplish-red, with their respective tones, from that characteristic of anæmia, to that indicative of chronic congestion of the gum, and a few minutes firing seemingly animates the substitute with very life. What more is needed than a simple *modus operandi* capable of invariably conforming the materials to the will of the manipulator. Mr. Rollins has made a praiseworthy attempt to meet this want and as before hinted, in the interests of others, has perhaps sacrificed much to his cherished object, but I question whether his judgment in this respect has been so good as his motive. He lays too much upon the enquirer without supplying the essentials. If every dentist sufficiently understood the chemical constituents, affinities, and other qualities of the materials used to enable him to present acids to bases in such an atomic ratio as to ensure by the play of chemical affinities, liberated by heat, the formation of a product so foreign in its nature to that of its constituents as to be perfectly insoluble in their solvents at low temperatures and to direct his operation to the successful development of all other qualities necessary to appearances and usefulness his case would then be very different; but his special mode and formula convince me that he is no stranger to the fact that dentistry knows no reliable written authority on this subject. (That which is applicable to teeth applies with equal force to other modifications of dental porcelain.) Not one of the many published formulas if strictly adhered to would furnish a tooth either fit for sale or use. The very instructions are sufficiently misleading to effectually cut short the hope of any dentist interested with the matter. I will give one example: Richardson names oxide of zinc as a lemon yellow pigment. Now, pure oxide of zinc, so long as it exists as such, is incapable of imparting any permanent colour to silicious compounds; a lemon

yellow is brought out by heat, but this is only a transient colour which dies away as the mass cools down. This oxide is well-known for producing beautifully white transparent silicates, and for its brightening effect on most colours. The best authorities on chemistry, too, are equally unreliable, even so good an authority as Ure, gives for dental porcelain formulæ which are ridiculous. Mr. Oakley Coles in his manual candidly admits the enormous difficulties in the way of authors acquiring the modes and formulæ used by tooth makers, his sagacity serving to show him the probable value of the information obtainable, as he informs us that tooth-makers guard the secrets of their manufacture with religious jealousy. That one paragraph contains more truth and more practical worth than all the elaborate fabrications of all the other authors put together, and I think that Mr. Rollins would have done well had he profited by it instead of permitting his zeal to carry him outside the sphere of his own experience. A speedy, general adoption of the inevitable extended application of porcelain to dental practice is not likely to be facilitated by quoting formulæ in such an embarrassing manner. The fullest details ought to be carefully treated, including even the wrinkles of practice, which are usually the absurdities of theory, otherwise a network of difficulties is unwittingly cast about the student, from which nothing but a practical knowledge of chemistry or a painful experience, and probably a combination of both could ever progressively extricate him. It is with a view to the possibility of preventing this disappointment and fruitless expense that I address these remarks to you. I quite believe that Mr. Rollins' "enamel" formula is his own, that he has used it successfully (the fullest sense of that word is not intended) and that if others strictly adhere to his instructions and use the materials which he uses the same result would answer their enquiry. I am equally sure his quoted formulæ for porcelains, they being identical with the standard formulæ, for tooth body, are not his own, that he has never successfully used them and that no other person could use them as directed and obtain a satisfactory result therefrom, on the contrary, the product must be foreign to that anticipated at

the onset. Passing over Mr. Rollins special formula which, I think, has too much alkali to do much service and is further unfitted for dental purposes by the lead it contains, though its presence in so small a quantity may be inert. Yet it is by the composition rendered extremely liable to blacken in the mouth. The texture of the formula being too vitreous, is weak, and is liable to crack, as he admits, from slight causes. The cement used for securing these plugs would not suffice for fixing a plug, restoring half a central incisor, or other frontal. Mr. Rollins cautions dentists against the practice of filling cavities with portions of mineral teeth, because "if the body of the tooth is used the filling will be too opaque while if the enamel of such a tooth is taken the cement shows through the edges." I quite agree in that the separation of the enamel from the body of a tooth would be a very unsatisfactory procedure which, on completion would deter any person possessed of only normal courage from carrying his error to further extremes. It would puzzle many men to find the "enamel" of an Ash's or of any other well made tooth, for tooth makers, whether they own that nature betrays traces of a designer, or whether they aver that an infinite intelligence has never flashed upon their retina one object superior to the productions of man's genius or beyond the possible grasp of finite comprehension, they alike agree that he who most faithfully copies the appearances of the natural organ, produces the best tooth, not only in respect of those appearances. but in that of strength and other essentials to usefulness also. Hence the similarity of the fracture of a well-made tooth to that of the natural organ. Yet what self-abasement the comparison ought to enforce, what flouted intelligence, yet how astounding our ignorance. Inflated with conceit, yet in reality delvers on the wastes of God's creation, searching for a few crude materials wherewith to make a dead imitation of a living object, which even as such is by microscopical examination shown to us as bearing no analogy thereto, and altogether unworthy of such comparison, revealing also at once the imperfection of our mental and material conceptions, which, however, are equal to the strain-resisting capacity of our material system. Mr.

Rollins' remarks apply to the teeth of those makers whose progress is behind that of their competitors, but I think of these only two survive the struggle for merit, and they are fast becoming extinct, therefore some misunderstanding of his meaning is likely to occur, from the fact that mineral teeth are without a separable enamel.

There are five methods by which tooth enamelling or glazing may be done. 1st, packing the enamel as described by authors; 2nd, subliming the glaze from a prepared muffle; 3rd, volatilising a float placed within an ordinary muffle; 4th, slipping the glaze; 5th, sweating the glaze. The last named is the mode practised by the best makers. Their tooth being so manipulated that it assumes a dull and somewhat fibrous texture whilst its exterior is brightening and they so compound their formulæ that the tooth sweats its own glaze, and becomes translucent during semivitrification of the mass. Mr. Rollins recommends oxide of uranium for producing a yellow. An order for oxide of uranium may be answered by receipt of any one of the six oxides of that metal. These oxides, by proper manipulation, yield pigments of the following colours—light yellow, deep yellow, straw yellow, reddish yellow, brown yellow, yellowish red, bronze, mosaic gold, yellowish rose red, bright brownish orange, green, black, and also a colourless silicate even when a large quantity of oxide is used. I presume the yellow or sesquioxide is intended. This oxide is reduced when heated in a closed muffle at a temperature below that necessary for the fusion of his compounds, but as he manipulates at an open muffle the oxygenated atmosphere therein contained would not abstract the atom of oxygen which is the colouring principle of the pigment, as the gases of a closed muffle would. It is also possible to include in a formulæ an element combined with oxygen having less affinity for oxygen than uranium has, in which case although the sesquioxide of uranium be temporarily reduced in the presence of a reagent on the application of heat, it would recover its lost atom of oxygen at a temperature sufficient to facilitate the play of its affinity. A novice may easily produce a black by his utmost endeavours to obtain a yellow, or a colourless silicate may

reward his attempt to develop either of those colours. The uranates are more easily worked than the pure oxides the oxygen being then practically chemically fixed. Silver yellows require experience and care, and ought never to be recommended without the fullest instructions are given. Gold is a most intense colour when skilfully handled. One author informs us that "no less costly a material suitable for gum colour has ever been discovered." That remark is very misleading, for one grain of gold properly compounded will impart a red colour to one pound of dental porcelain material, but used in the manner described by written authors and Mr. Rollins, a large quantity of gold would be absorbed in that bulk of material and but little colour yielded by it. The above shows that a mere presence of gold is sufficient for turning the yellow of his No. 2 formulæ, the possible variations of the "variable quantity," therefore being very few. In fact the only satisfactory way of toning small quantities of that formula would be by mixing a pure yellow with toned yellow in variable proportions. Mr. Rollins includes several other pigments in his instructions, of which space will not permit any mention. And he asserts that "the amount of colouring must be found by experiments as the commercial oxides vary in strength." An oxide cannot vary in strength, it either is or is not what it should be, either pure or adulterated, even though the adulterant be another oxide of the same metal. In many cases foreign matter is either intentionally or accidentally incorporated therewith, and as the colours imparted to porcelain result from the play of delicate chemical affinities which only act under certain conditions, it becomes absolutely necessary that the nature and condition of the materials used be fully understood. Even when the pigments are pure chemical law forbids their indiscriminate use or admixture—thus, sulphur colours and oxygen colours when presented to each other are mutually destroyed, other peculiarities also being sometimes manifested as exemplified by the sulphide of cadmium which is a most persistent and refractory colour. Yet alumina causes its decomposition and total dissipation without itself undergoing any chemical change. Mr. Rollins does not assign any reason for omitting

the mention of titanium oxide in connection with his formula and preferring it as a pigment for dental "porcelains." (It is common to all published formulas.) The greatest difficulty is likely to be experienced in procuring metallic titanium and its oxides the substance answering to the oxide of titanium or titanous acid, a white powder which becomes yellow when heated in the muffle, the protoxide, and the sesquioxide, both black, but which are converted into titanous acid by heat, these may be bought under that name and probably the mineral anatase or native oxide too. The substances sold as metallic titanium are the nitrocyanide of titanium, a copper coloured compound which occurs in the slag of iron blast furnaces and usually supplied from that source, sometimes metallic titanium in the green amorphous condition, and more rarely metallic titanium as a reddish crystalline mass. There are cheaper, stronger and better yellows than those which titanium yields, but if titanium is recommended probable disappointments ought to be considered and prevented by a clear definition of the compound intended for use. I will consider briefly his formulas for dental "porcelains," which are the type of compositions for tooth body as published by dental authors: Silica feldspar and clay either with or without oxide of titanium, and platinum colour, as pigments, being the materials used. Let us with the mind's eye watch its behaviour from beginning to end. On introducing the mass into an ordinary muffle at maximum temperature, the silica devitrifies the feldspar, abstracting and dissipating its alkali thereby increasing its opacity and making it more difficultly fusible. The exterior gradually assuming a skinny or dullish shrivelled appearance, the mass contracting on itself in the balling up tendency common to some silicates until its exterior has become bright and glossy and the mass has assumed a semispherical shape. This, when removed and cooled down is too opaque to compare favourably with the teeth, and the resemblance of its dimension to that of the cavity is entirely destroyed. Thus a tedious operation results in an unlooked for but inevitable and most complete failure, and its corresponding disappointment to both practitioner and patient, indeed if the porcelain preparation had

been placed in a cold muffle and slowly heated up it would become so infusible by the prolonged volatilisation of its alkali contained in the feldspar as to be refractory at the highest temperature of any ordinary gas furnace. I may add that I have not subjected Mr. Rollins' formulæ to any test whatever, my remarks being guided solely by a knowledge of facts based on past experience, therefore if he chooses to oppose them on that ground, I will before appealing to others actually subject them to treatment. I do not wish to depreciate Mr. Rollins' efforts and their result, I repeat that his own formula, "enamel," and *modus operandi* are practical though very inconvenient. It is only when for some untold reason he deviates therefrom and reasserts as facts that which comes to him otherwise than by demonstration, that his actions thwart his good intentions and entail trouble, disappointment, and expense upon others. I think, too, that much harm may result from the careless quotation of formulas as also from an accurate rendering of such, unaccompanied by their fullest details. The practitioner is better served with the combination of a simple practical and reliable mode and the very materials prepared ready for his use. Individual formulas must ultimately be the natural outcome of porcelain manipulation and may yet be used for fencing individual interests. No man daring to place another man's case in his muffle lest the conflicting elements brought into contact by the addition of his compound to the original, bring about the defeat of his own purpose, and involve him is an obligation to his patient, but this is chargeable to human nature only and not to porcelain. We cannot reasonably expect men in active practice to take up the complicated theories and practices which govern, and when skilfully conducted result in the formation of compounds necessary to their use until such claim upon their time and interest is forced upon their perception as necessary, by substantiation of the merits claimed.

Next month, by your favour, I will describe in few words a simple process which I have used with great satisfaction, and which produces plugs restoring the contour of the tooth and fitting the cavity with astonishing accuracy. It is, moreover, certain in its results and presents no opportunity for

guessing-a-near-enough. I may just say that those who have that simple, useful, and cleanly arrangement called Verrier's furnace, are in a position to test the merit of this simple method and to produce a plug superior to every other filling.

A SIMPLE ARRANGEMENT FOR APPLYING PINK AND BLACK RUBBER.

By M. S. BURROWS.

After deciding the size of frame, I cut a piece of sheet lead (rolled out to about half the thickness of modelling wax) as I think such a size cannot be procured. This piece of lead is then pressed carefully on the model to shape as near a fit as possible. It should be an eighth of an inch less than the denture required on all sides, insert a plaster in flask as usual. When it has hardened the flask is taken apart, and the lead plate removed. Next a pin of black rubber is cut about the same size, you then warm and fix the flask and vulcanize about fifteen minutes at 300 Fahr. Ritchie's Small Vulcanizers are very handy and no trouble. You now pack your case, as for gum facing, and nearly all over palate, then place the half cooked black rubber piece in, packing a few small bits of black rubber just to connect to pins of teeth; then cover all over with pink, prepare and vulcanize about the usual time, if moderate care is used the case will be entirely coated with pink. You will have a stronger frame than all red, and much nearer the colour of natural palate. I use Ritchie's A.X. pink gum facing; find it stronger and a beautiful colour especially when exposed to the sun for an hour. These cases are smoothed and polished in much less time.

THE MORALITY OF PERSONAL HYGIENE.—Those who would scorn to tell a lie or filch a leg of mutton yet daily violate the most sacred of laws, self-preservation. We see it in the reckless disregard most persons pay to the well-being of their teeth. Medical men see the same thing only extended to all the tissues of the human frame. Surely dentists should turn moralists and preach *mens sana in corpore sano*.

Reflections from the Surgery.

A CASE OF CLOSURE OF THE JAWS TREATED BY REMOVAL OF THE CONDYLE AND NECK OF THE JAW.

Under the care of Mr. CHRISTOPHER HEATH, F.R.C.S.
Holme, Professor of Surgery in University College Hospital
London.*

CASE 1. Closure of Jaws, due to Enlargement, probably from Rheumatoid Arthritis, of the Left Neck and Condyle of the Lower Jaw: Excision of the Upper End of Ramus: Great Improvement.—E. B., aged 36, female, was admitted on February 26th, 1883. She had had small-pox about twenty years earlier, and had occasionally suffered from chronic rheumatism in the elbows. In 1872 she had an attack of partial hemiplegia on the left side, and she then noticed that her face, which had previously been symmetrical, was drawn to the right side, and that she had difficulty in opening her mouth; the displacement of the jaw to the right side had been increasing ever since 1872. She had gradually recovered the use of her limbs, but not entirely that of the left side of her face.

Her state, on admission, was as follows: The lower jaw was displaced to the right, so that the middle of the symphysis lay vertically beneath the centre of the right pupil when the eyes were directed forwards. The symphysis was unaltered in shape. The right angle of the jaw was only half an inch below the lobule of the ear, and the continuation backwards of a line along the lower borders of the jaw passed over the tip of the mastoid process. The right condyle was apparently buried beneath the zygomatic arch, and in place of the normal elevation there was a depression opposite the articulation. Between the left angle of the jaw, and the upper border of the zygomatic arch there was a hard bony mass continuous with the jaw, and extending forwards to the molar bone, with the lower border of which it merged. The

* Reported by Mr. BILTON POLLARD, F.R.C.S., Surgical Reporter.

whole of the outer surface of this enlarged ramus was smooth, and over it the masseter muscles appeared to be tightly stretched and united to it by firm tissue.

The patient experienced abnormal sensations in the skin of the whole left side of the head and neck, where also tactile sensibility was diminished; there was partial paralysis on the left side of the face, but the limbs of that side were as strong as those of the other.

March 14th. The patient being under the influence of chloroform. Mr. Heath tried to move the jaw, but failing to make any material alteration, he made a vertical incision along the upper two-thirds of the posterior border of the ascending ramus of the jaw, and extending down to the bone. He then stripped off the soft parts from the front and back of the bone, and divided the latter with an Adam's saw. The soft parts were next cleared from the upper fragment, which was, with some difficulty, levelled out of its position with an elevator, bringing away with it a small portion of the temporal muscle; the wound was mopped out with a solution of chloride of zinc, a plug of lint, soaked in the same, and was left in it, and a dressing of iodoform and salicylic wool was applied outside. The portion of bone removed consisted of the enlarged condyle, the neck of the left ramus, and a small portion of the posterior border of the coronoid process. At the site of section the bone was natural in size and consistence, but above that it became expanded into a broad, oblong mass, with a rough, flattened surface, measuring $1\frac{3}{4}$ inches from before back, and about 1 inch across. The outer surface of the mass, although nodular over the upper half, was smooth, and covered by a layer of dense bone, varying from 1 to 2 millimetres in thickness in front to a mere shell on the posterior border. The cancellous tissue filling the interior of the mass was in greatest quantity at the upper part, but the spaces were everywhere small, and the spicula of bone thick, so that the whole tissue was dense.

March 16th. The plug of lint was removed. There was a good deal of redness and swelling around the wound, extending to the cheek. The wound was syringed out and re-dressed.

The subsequent progress of the case was marked by increase of the swelling, and the formation of a slough at the bottom of the wound, which separated on March 27th, she was free from pain, and the sensation on the left side of the face was rather better ; but she was not able to close the left eye completely. The swelling of the face gradually subsided, and the patient nearly regained the power of closing the left eye. She was sent to the Convalescent Hospital, Eastbourne, on April 12th.

Dr. Williams, of Sherborne, reported some months later, that the movements of the jaw were very satisfactory, and that the patient had been able to take a situation, which her unsightly appearance had previously prevented.

COLLODION.—A German periodical gives the following :—If a plate of glass be covered with a coating of collodion—after it has dried—a sheet of printed paper placed upon it and rubbed over with the hand will impress the letters upon the collodion, which will remain visible after the collodion has become perfectly dried. The impression is best seen by transparency and with reflected light ; if the impressed surface be breathed upon, the letters will appear bright upon an opaque ground.

AFFECTIONS OF THE GUM IN RELATION TO OTHER DISEASES.—Dr. Kaczorowski (*Przegląd Lekarski* and *Vratch*, quoted in the *London Medical Record*, draws attention to a connection existing between gingival affections and certain other diseases. In four of his cases chronic gingivitis caused the occurrence of hallucinations, melancholia, nervous excitement, and insanity. Extraction of destroyed teeth and appropriate treatment of the inflamed foul gums were followed, in each of the cases, by restoration to health of the nervous system. Further, the author saw several instances where affection of the gum led to general septicæmia. He thinks generally that premature senile debility of the organism may often depend upon dental caries, leading to absorption into the system of septic products of slow decomposition.

British Journal of Dental Science.

LONDON, JULY 15, 1885.

THE COLONIES AND THE ADVANCE OF DENTISTRY.

IT was not long since England as a nation felt her heart beat in warm gratitude and her pulses stirred by eager enthusiasm when she learned how dearly loved was she by her children, the Colonies, who "were so near and yet so far." It was but yesterday when we hoped to have welcomed over here in the dear old Mother Country, that noble band who, leaving their Colonial homes, sped forth to fight and, were it needful, to lay down their lives for England's honour and England's proud name. Among the many issues this act of patriotism has raised must be one standing pre-eminent, one which tells us that the Colonies and the old Mother Country are one in thought, and are as closely knit as common interests and a mutual love can bind. We represent but a section of this wide-hearted England, but as a class we have especial interests in watching the advance and progress of the Colonies. Dentists cannot forget that one of the most genial and esteemed of the London practitioners—Mr. Alfred Coleman—has become a Colonial and has shifted the canvas of his life from the busy, throbbing heart of London City to the salubrious clime of New Zealand. And again, do we not remember how recently it was our duty, and a most pleasurable one—to record the foundation and successful starting of an Odontological Society, in the Colonies. But recently during a stay in London one of the most distinguished dentists of Melbourne was present and spoke before a kindred society. Surely then may we not put the pertinent question, How fares it with our Colonial brethren, the dentists? The *British Journal of Dental Science* has many friends in the Colonies, and to these we must leave in the main, the answer to this question. Nor can we do better than to refer to Mr. Morford Cottle's letter which appears in our Correspondence Column. The passing of Dentists' Acts for the Colonies of

course alters to a very large extent both the present status and future of the profession in the Colonies. Professional merit soon forces itself into the notice of the public, who are not as a rule slow to find out the best man and to stick to him. Our correspondent deplores that many now stand upon the Register whose professional attainments are not such as render them either fit or suitable as practitioners. We sympathise, as will our readers, with Mr. Cottle, but at the same time we see the silver lining to the cloud and believe that in the due course of time that grand principle enunciated in the expression, "the survival of the fittest," will set matters right. We notice that our correspondent has, in his own proper person commenced a new order of events—we refer to Mr. Cottle's appointment as Dental Surgeon to a hospital an appointment we believe we are right in saying, is the first, Colonial one of its kind made up to the present time. We regard the appointment of Dental Surgeon to a general hospital as a distinct benefit, for even if our position be one open to contention in England, or shall we narrow our field to London, yet we deem it unquestionable that in the Colonial cities which have no special dental hospitals or schools, such appointments are absolutely necessary. It would be of material interest to know how far the Colonial practice became tinged by our own at home and how far it opens for itself fresh departures and methods. We are told that pyorrhœa alveolaris is a common complaint among colonials—a complaint which cannot fail to offer especial interest to us, since its treatment can hardly be said to be well understood or thoroughly under control. And passing on to a further remark of our correspondent's, viz., that the teeth of the average colonial are good, one at once wishes to learn how far the differences which exist between the food and social habits of Colonials and ourselves reveals itself in the economy of the teeth. There are so many useful facts of comparative ethnology of interest to dentists that we welcome with avidity any information from other lands and especially from the Colonies.

DEBATE UPON ANÆSTHETICS.—Our contemporary the *Journal of the British Medical Association* gives particulars of the oncoming gathering together of the doctors at Cardiff. The Section (a new one last year by-the-bye) devoted to Therapeutics and Pharmacology, is to include in its programme a debate on Anæsthesia, General and Local, which will be opened by Dr. Dudley Buxton, Mr. Clover's successor at University College Hospital, who will be followed by Professor John Chiene and Dr. Milne Murray, Mr. Woodhouse Braine, Mr. Bailey, Mr. Marcus Gunn, and Dr. Redwood. Dr. Carl Köller, of Vienna, and Dr. Dujardin-Beaumetz, of Paris, will attend, and take part in the proceedings of this Section. In connection with the debate on Anæsthesia, demonstrations of various anæsthetics and apparatus will be given.

A DEBATE upon the same subject was announced to be held before the Medical Society of London in its last session, but as a debate it must be confessed it was a failure. It elicited a pleasant chatty paper from Mr. Woodhouse Braine, always a pleasant speaker, and another by Mr. Eastes, which was "untimely done to death;" debate there was none worth the name. We shall hope this important subject will be more thoroughly sifted and sorted at Cardiff. *Nous verrons.*

APPOINTMENT OF A DENTIST TO A COLONIAL HOSPITAL.—At the last meeting of the Hospital Committee, Mr. Cottle was appointed dental surgeon to the Hospital, subject to Dr. Earle's consent. Dr. Earle has signified his acquiescence in the appointment, and the clerk has notified to Mr. Cottle that the appointment will be made. This is one of the first, if not the first instance, of a dental surgeon being appointed to a Hospital in the colony. [New Zealand.]

MR. MORFORD COTTLE is a prominent practitioner in Wangamī and it is to the hospital at that place to which he has been elected.

UNQUALIFIED PRACTITIONERS IN THE UNITED STATES.—“Only about one-fourth of the dental profession in the United States are graduates of dental or medical schools, the other three-fourths have no degree, either academic or scientific. We can mention one State with three hundred and fifty dentists, and only fifty-six of this number hold a diploma.” The truth of this statement is vouched for by *Facts*. It cannot fail to interest us over here, who are so anxious to do things decently and in order, at least in the way of making folks get qualified and registered.

STRANGLED TO DEATH BY FALSE TEETH.—Capt. Bankhead of Grafton, W. Va., a well known civil engineer, was suffocated by a set of false teeth becoming loose in his mouth. The Captain had been in ill health for some time, and it was under the influence of chloroform, which was given him during the performance of a delicate operation that the accident occurred. He was about sixty years of age. So runs the sad story as related in the *American Journal of Dental Science*. We cannot help feeling that such a death is simply unnecessary, and is the result of a neglect of one of the routine rules which would have guided a skilled anæsthetist. Such a one would have insisted upon removing the denture before the operation. It is said “those who hide can find, and hence it may be that a dentist is especially on the *qui vive* for tooth swallowing. The average medical man calmly commences anæsthetising without ever looking into his patient’s mouth, and so endangers a life, as in the case cited above. *Verb. sap.*”

LAW REGULATING THE ADMINISTRATION OF ANÆSTHETICS.—Speaking of anæsthetics we would like to draw attention to the law as it exists in Section 6,990 of the Revised Statutes of Ohio:—“Whoever uses upon another an anæsthetic, unless at its administration, and during the whole time the person is wholly or partly under the direct influence of it there is present a third person competent to be a witness, shall be fined not more than twenty-five nor less than five dollars.” Surely a most salutary law, and one which might well be imitated upon this side of the Atlantic!

FRACTURED TEETH RE-UNITED.—Dr. Wingate of Carbon-dale, exhibited before the Pennsylvania Dental Society a number of unique specimens—teeth that had been fractured in the mouth, and had united. All but one were from young patients. The exception was evidently an adult's tooth—an incisor—and had been split almost the entire length of the root, and the parts slightly separated. Union had taken place by the same process that fractured bones are repaired, the space being bridged over, except at one point, where an opening existed communicating with the pulp chamber—and this defect, no doubt, caused the loss of the tooth. One of the others had attached to it a bony process starting from about the point of fracture (the fracture had been a transverse one, about where the crown and root unites), and at right angle to the tooth about the sixteenth of an inch, it then curved abruptly down, and was, perhaps, a fourth of an inch long. Evidently when the injury took place, a fibre or shred of periosteum had been torn off. He had some six or eight in all; they were all so very much distorted in shape that their extraction was a necessity. He was unable to give their history beyond the fact that their presence becoming a source of irritation they came to him for relief.

THE doctor has practised a long time in the mining regions of Pennsylvania, where a large number of lads are employed in the coal mines, and are constantly exposed to accidents of various kinds. While in the coal mine we had an illustration of the risks they run:—While a train of empty cars—such as are used to carry the coal from the distant workings to the shaft—was passing, drawn by mules and going at a rapid rate, a party of lads employed in the mine rolled over the sides and threw themselves alongside of the track; the danger of such an acrobatic feat will be understood when we say that there was scarcely eighteen inches between the top of the car and the roof of the mine, and but little more between the side of the car and the wall. They evidently were used to it, as all landed *standing*, and enjoyed our surprise at their sudden and unexpected appearance. A very little miscalculation would be likely to cause a severe blow on the face.

WHEN TO CLEAN THE TEETH.—We find the following very pertinent remarks in the *Scientific American*: Of all the people who clean their teeth regularly, it is certain that a very large proportion only do so once a day, and that generally at the time of their morning ablutions. A much smaller number also do so at retiring, but the number of those who make a practice of regularly brushing their teeth after eating, the most important time of all, is indeed very small. It is while eating that all little cavities or interstices between the teeth become the repositories of fragments of food, or traces of some acids in the food are left on the teeth to cause incipient decay, and to hasten it where it has already commenced. It is, of course, desirable to brush the teeth on rising in the morning, and before retiring at night, but it is of infinitely more importance that they should be thoroughly cleaned after eating.

SALICYLIC ACID IN DENTAL PRACTICE.—Salicylic acid, applied with a small pencil to the necks of the teeth following the removal of the deposits of salivary calculi, has proved a most beneficial treatment in my practice, and especially so since I began the use of the acid made from the *true oil of wintergreen* in saturated solution (1 to 2) with alcohol. Most of the commercial acid is made from carbolic acid (a few drops of oil of wintergreen being well rubbed in to give it the odour). The pure acid, unbleached, being the best will be recognised as slender, needle-shaped, straw-coloured crystals, having neither the smell nor taste of wintergreen, but rather astringent, provoking a free flow of saliva.

So writes a correspondent of the *Dental Cosmos*. Salicylic acid has perhaps not received yet its full range of usefulness accorded to it by English dentists.

GOLD SOLDER.—Dr. J. J. R. Patrick says, according to *Items of Interest*, that an easy flowing and a stronger solder can be made without the admixture of the baser metals. Jewellers or goldsmiths who seldom use a higher quality of gold than 16-carat, never use the baser metals in the compo-

sition of their solders, excepting when pin brass or spelter forms a portion of the alloy in the composition of the lower grades of gold they may be working, the spelter or pin brass in combination with fine silver is used in making the solder, in the place of fine copper. Dentists, however, who have no use for gold of a lower quality than 20-carat, can very well use a fine quality of solder that will flow as easily under the action of the blowpipe as the solders made from lower qualities of gold. All gold solders that are to be used on gold above 16-carat fine should be made *from the gold that is to be soldered*, and according to the following formula: Gold 89 parts, silver 7 parts, copper 4 parts. *There is no solder made that will relieve the manipulation from the effectual use and application of the blowpipe.*

Manipulative Miscellany.

All inventions or articles wished to be described under this heading are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month; they can be returned in a few days. Where from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits, and without any intention or wish to pit one against another. All makers, vendors, and inventors are invited, with strict impartiality, to contribute towards this end.

UNIVERSAL GAS-BOTTLE UNION.

Mr. John Richie has designed and made a gas-bottle union calculated to entirely overcome the hitherto frequent annoyance of irregular diameters of the various gas-bottle screws. The new union is somewhat similar to those in use, but cut through in two places with a saw. Outside this cut union, and affixed to one portion, is a strong collar having a set screw opposite the other, or loose portion. If a gas-bottle screw is too small the tightening of the set screw so compresses the two parts of the union that a firm grip may be depended on in every case, whilst its release will equally accomodate a bottle with an unusually large screw.

Reviews.

Kelly's Directory for Chemists and Druggists of England and Wales: Fifth Edition: London, Kelly & Co., Great Queen Street, Lincoln's Inn Fields.

Messrs. Kelly have for a long while enjoyed the reputation of publishing some of the most useful directories now in the

market. The volume before us contains a vast amount of valuable information and so well arranged that it is always to be found. Indeed, so much of importance to all who remotely or directly are connected with pharmacy and its collateral branches, that this directory is really a *sine qua non* to them.

It is superfluous to speak well of matters which are intrinsically so good that their own merits speak for them, so we shall only say of the directory before us that it needs only to be used to be appreciated. It is difficult to find any true directory business which is not duly arranged, labelled, docketted, in its own particular place. The general get up of the book is good, the type is clear and legible, while the method adopted in arranging is excellent. A glance at the preface shows how many additions have been necessary since the last edition was published and also reveals how widely ramify the chemical interests of this country. There is a large amount of useful statistical information in this preface which well repays one's reading.

Abstracts of British & Foreign Journals.

ÖSTERREICHISCH UNGARISCHE VIERTEL JAHRSSCHRIFT FÜR ZAHNHEILKUNDE.

SOME REMARKS UPON EXTRACTION OF TEETH.

By Dr. WITZINGER, Dentist, Vienna.

Of all dental operations tooth extraction is the one most often practised by those who know nothing of dentistry. It still happens in some places where there are no dentists that barbers, innkeepers, and others cause much pain through their unskilful manipulations, and add injuries to those already existing. It would be much to the interest of sufferers if doctors during their education in the hospitals did not neglect the opportunity of becoming skilful in the extraction of teeth, so that later on their patients might not be left to unfit hands; but it cannot be denied that for the attainment of such skill a very great number of cases of

extraction is necessary, and that the material required is not always to be had. The necessity of such practice is shown by the fact that many doctors noted for their success in difficult operations of another kind, often fail in the extraction of teeth.

If it is true that difficulties exist which defy the greatest skill, such as crookedness of the roots of single sealed teeth, convergences of the root points, considerable divergence of the roots, small elasticity of the alveolar process, &c., so on the other hand it is not less true that in the greater number of cases such difficulties do not exist, and if any misfortune happens, it is to be ascribed to causes incidental to every extraction and cannot be foreseen or provided against.

In the first place the position of the operator is of the greatest importance to the patient. The operator should during the whole of the operation keep his eye on the tooth that is to be extracted. The numerous cases of healthy teeth being unintentionally extracted, are to be accounted for by the fact that whilst arranging his instruments the operator takes his eye off the tooth. Dr. Witzinger of Vienna, tells of a case in which a dentist wished to remove a lower wisdom tooth with the elevator, but he pressed in the elevator between the first and second molars instead of between the second molars and the wisdom tooth. The resistance on both sides was, as may be supposed, excessive, as the second molars against which the power of the elevator was directed was supported by the wisdom tooth, and the first molar by all the teeth standing before it. This excessive resistance caused the dentist to see his error, and the wisdom tooth was then easily removed. But soon after the patient had to suffer the loss of the neighbouring teeth, in consequence of alveolar abscesses and necrosis of the alveolus, arising from the force which had been used. If the operator had not discovered his mistake it might have ended in fracture of the jaw. The direction in which the forceps are pressed between the neck of the tooth and the gum must be controlled by a sharp eye. Should the forceps be directed too far forwards or backwards in single rooted teeth, the whole of the root would not be seized. So through

insufficient fixation of the tooth to be extracted, the operation is made very difficult, in some cases almost impossible. And besides, the tooth before its extraction, should be loosened from the alveolus. In order to be able to watch the tooth to be extracted during the three phases of operation: 1, The seizing, the fixation, and the extraction, the most favourable position is to stand in front of the patient a little to the right. In this position all the teeth of the upper jaw and, with the exception of the three lower molars and the two lower molars to the left, all the teeth of the lower jaw can be extracted. As concerns the last mentioned teeth, in this position they could only be extracted by the left hand—it only requires sufficient practice to render this practicable. Dr. Witzinger says he has operated in this way for several years, and that it is easier to obtain proficiency in left hand extraction than is generally believed. The position behind the patient is usual with some dentists only on the extraction of the right lower molars, but with others on the extraction of every tooth; the latter have a stool placed behind the operation chair on which they mount, bend the body so far forward that the head comes in front of the patient, and work in this unnatural position until the operation is completed.

Another important circumstance for the success of the operation is the fixing of the head and the repose of the patient. Concerning the fixing of the head, whether narcosis is employed or not, it should never be neglected. If the patient is conscious it will generally happen that in the beginning of the operation he will move the head, and so frustrate its success. If the patient is narcotised and the head is not fixed by some assisting attendant, it will follow the pulling of the forceps. Concerning the repose of the body, it is best attained by narcosis, and considering the sharpness of the operation, nitrous oxide is preferable to chloroform.

With tiresome children, to whom talking does no good, it is best to put the child on the lap of an assistant, who must cross his legs over the legs of the child, with his right hand hold both the child's hands, and with his left fix the head against his breast.

Laughing gas is very advantageous for children, as anæsthesia soon comes on. In the case of adults anæsthesia seldom comes on so quickly, and one cannot deny that asphyxia often ensues.

The choice of instruments is of great importance for the success of the operation, the old proverb, "The best workmen are known by the fewness of their tools," is not appropriate for our time. The choice of instruments must depend upon a careful examination of the tooth to be extracted. The dentist must find how deeply caries has destroyed the tooth, and whether the forceps can take a firm grip of the neck of the tooth. The dentist must be careful not to make superfluous seizures, as these may so alarm the patient that he will not come a second time. In fractures of the tooth it generally happens that countless vain attempts have been made to extract the root. In every case one ought to be convinced whether the root can be removed without injury to the alveolus. Dr. Witzinger does not consider it admissible to attempt more than once the extraction of the root of a fractured tooth. If the circumstances are such that the root can be removed with suitable forceps without injuring the alveolar process it must be done in one attempt.

It must be said that tooth extraction is not an aim in itself, but only the means of curing an existing dental affection.

If a root remains in the alveolus, especially amongst the lower molars where the outer alveolar wall is thickened through the *linea obliqua externa*, it is almost impossible to put the forceps between the root and the alveolus, but the part which extends over the alveolus will soon be resorbed, as the root membranes of the tooth neck which provides nourishment for the edge of the alveolus was torn away. Patients for the most part expect the dentist to complete the extraction with one attempt, an expectation not generally disappointed.

DUETSCHER MONATSSCHRIFT FÜR ZAHNHEILKUNDE.

OPERATIONS ON THE JAWS AND CONTIGUOUS PARTS, by ANTON WITZEL.

Herr Witzel gives the following interesting account of some operations at which he was present, and which took place in a surgical hospital at Bostock.

In a case of resection of a part of the lower jaw, after the jaw had been sawn through it was syringed. The inferior dental artery was divided and it was impossible to take hold of it with the forceps. Much pressing together of the ends of the artery with the point of the forceps was sufficient to stop the bleeding, for it is a fact, that however violent arterial bleeding may be, it can always be stopped by continuous pressure and kneading of the ends of the arteries.

Operations in the cavity of the mouth are, it is, well known, often accompanied by violent bleeding, which as a rule soon ceases. This capillary bleeding is generally more violent than bleeding in any other part of the body. In some cases of resection of the lower jaw the bleeding in the cavity of the mouth was stopped only by keeping the body of the patient in a horizontal position to that no operation was possible.

The cutting through of the under jaw presents many difficulties. In the first place, the saw must not extend too far as that endangers other lanced parts, and in the second the bone of the lower jaw is very tough. Should there be teeth in the jaw they should be removed before the sawing takes place.

One especial difficulty in the operation upon the jaw is prevented by the numerous nerves and vessels which abound in the face.

The first cut traverses the branch of the facial nerve, after which as a rule the internal maxillary artery will be caught and tied. After a partial resection of the jaw it becomes somewhat dislocated, but after some time resumes its normal condition and mastication becomes possible,

In staphylorrhaphy, when undertaken, on account of some defects of the palate, due to syphilis, one is obliged to operate upon the subject with his head hanging down. The blood under these circumstances, during the narcosis penetrates into the windpipe; but the blood may become so excessive that operation has to be completed with the patient in an upright position.

If during an operation on the jaw the air should get into the wound as well as into the nose and mouth, the narcosis

will be imperfect and the patient will be more or less conscious of the pain.

Abscesses in the lower jaw, caused by periostitis about the teeth, sometimes cause large swellings on the side of the face affected. A young man in whom the sub-maxillary glands were suppurated. To get rid of this took some long time as some of the parts affected lay deep under the greater vessels and nerves of the neck. Two very carious teeth were discovered to be the cause of the continual inflammation and were extracted.

In the case of a young girl suffering from osteomyelitis caused through a carious tooth stump which caused the formation of an abscess; this left a fistula on a part of the sternocleidomastoid muscle. At first this was treated for a long time quite unsuccessfully, but after the extraction of the tooth stump it disappeared.

A boy of about three years old, had a sarcoma in the lower jaw, which rose in an arch behind the upper lip. It had already been extirpated, but had recurred. The soft part of the swelling was loosened with the knife, and the part of the alveolus taken up by the swelling was removed with the saw, a manoeuvre which was difficult, as the saw could not be extended far enough for fear of injuring the tongue. Great bleeding followed the operation, but soon ceased, and an iodine pad was applied.

A child of three months old had a hare-lip and in the upper jaw a cleft in the alveolus. After compression of the coronary arteries, the part of the lip was trimmed and adjusted. Then after some cutting for the better union of the soft part, the lip was sewn together. The cleft of the alveolus was not touched as experience has shown that after operations on the hare-lip such cleft often close alone. A hard body found in the cleft was curious. After the blood had been washed from it, it was found to be an early cut milk tooth the root of which was only partly developed.

Prof. Madelung says that such milk teeth in clefts are often found amongst children of about six months old.

On the extirpation of an epithelioma of the lip after the narrowing caused by the removal of the portion of lip involved

sewing, a considerable narrowing of the aperture of the mouth was observable, so that another operation for enlarging that, had to be undertaken to allow food to be taken. Soup could only be taken in a child's spoon (this by a man of about sixty years old). Through a number of incisions and attention to soft parts of the mouth gave its original size. Then the mucous membrane was sewu to the skin and in this way the lip formed.

CORRESPONDENZBLATT FUR ZAHNARZHE. SOME PRACTICAL HINTS ON THE PREPARATION OF CAOUTCHOUC SETS OF TEETH.

By HERMANN FISCHER, Berlin.

Gutta percha is, recommended by Herr Fischer, for modelling purposes, he considers it superior to wax.

He gives the following description of his manipulations :

The gutta percha modelled setting is placed in the patient's mouth in order to fit and regulate the position of the teeth ; in case of any deficiency in the articulation, the model is laid aside, while the base of the teeth concerned is heated over a spirit lamp, after which the moderately warmed plate is placed in the patient's mouth and the artificial teeth arranged according to the position of the antagonised natural teeth. Then the modelled plate is removed from the mouth, placed carefully upon a plaster model, and the modelling completed,

The teeth in the plaster model are then cut so deeply off as to make the residue of the same height as the modelled gutta percha plate. The plaster model with the gutta percha plate upon it is then put into the upper part of the moulding tray, plastered in such a way that the artificial teeth remain free (contrary to the old method,) then the plaster sheet is neatly cut, oiled and the usual pouring made. After the plaster becomes hard the whole moulding tray is laid in a pan of cold water and allowed to boil.

When the moulding tray is afterwards taken out the gutta percha is softened to such an extent that it can easily be separated from the plaster.

Any remaining traces of gutta percha which may cling to the artificial teeth can be removed by applying benzine by means of a fine pencil to the whole base of the setting. The benzine dissolves the gutta percha, the remains of which can be got rid of by rinsing the mouth with warm water. The stopping of teeth is done in the usual way.

Literary Notices and Selections.

WHO ARE DENTISTS ?

By J. A. Robinson.

(Concluded from page 620.)

The bacteria theory must now be considered an accepted fact, as the best practitioners are full of experimentations with their antiseptics, and that mode of practice presupposes the septic or putrefactive condition of disease ; and it is an acknowledgment of the presence of bacteria. Chloric acid has thus far resisted every effort to decompose it. It is contained in the buccal fluids of the mouth, and manufactured from the salt contained in the food, and is antiseptic. The lactic acid and oxalic acid that ooze from the marginal gums of neglected teeth and the septic condition of the uncared-for mouth, with the oxygen taken in with the breath, and the saccharine nature of the food, furnish the necessary conditions for the propagation of bacteria that destroy the teeth and gums. Now, when the chlorine contained in the buccal fluids or manufactured from the salt, in combination with the acids in the mouth, comes in contact with *tin*, it is set free and unites with it and forms chloride of tin, which is antiseptic, and protects the organic matter from decay ; and hence tin becomes the best preservative material for fillings known to the profession. Food thoroughly masticated becomes filled with the fluids of the mouth containing chloric acid, and is less liable to become septic : hence the teeth of persons who chew their food well are less liable to decay, because of the condition of the food, as well as because of the friction caused by mastication and *deglutition*. Perhaps the nutritive fluid passing through the tubuli containing chlorides, acts

internally upon the tin fillings as well as the fluids of the mouth upon the surface, so that the whole filling becomes antiseptic. This constant effort to reproduce tissue and to resist dissolution lies at the base of all evolution, and when we can rightly diagnose disease and assist in any way to promote health, we add another link to the chain that lengthens human life.

When we get outside of the domain of fact, we base our hypotheses on appearances. The infinitesimal *cause* of disease, and its infinitesimal *cure*, are in many cases beyond mentality. We may be certain, however, that amalgam fillings are failures whenever the cavity runs beyond the free margin of the gums. Amalgam fillings are neither antiseptic nor escharotic, and the shrinkage will form a subterranean crypt between the walls and the filling, producing a compound cavity that deceives both patient and operator, and becomes the natural nursery for the promotion and growth of bacteria. Amalgam cannot be drawn over towards the borders of the cavity; and the moment crystalization begins, that moment the borders become a refuge and home for the bacteria.

There is a something beyond microscopic examinations or chemical experimentations: as much beyond as being is beyond existence, or spirit beyond matter.

I think the experience of the profession will bear testimony to the excellent qualities of tin as a filling; but the labour required to insert fillings of tin in many places brings into use amalgams, gutta-percha, and oxyphosphates, and thus, subsequently, the loss of many valuable teeth occurs.

Tin has less elasticity than any other of the metals; when bent, the crystals break or separate, and produce what is called the "cry of tin," but, combined with platinum and gold, the compound is more ductile than pure tin, and harder when burnished or malleted, being capable of resisting attrition, even when attenuated near the borders of the cavity.

After three years' experience with such materials, I do not know of a single failure or leakage in a filling in my own practice, and I deny the necessity of extracting any tooth, that (as Dr. Morrison, of St. Louis, says) cannot be *taken out with the fingers*.

The bane of all the professions is the love of ease and the unwillingness to work. Show me a single person who has made large attainments without labour, and—in our own profession—hard labour, both mental and physical. Point to a single artist of eminence who has not toiled early and late, or to a scientist, a physician, or a surgeon, for they are substantially the same, when devoted to their calling.

The true artist is so filled with the love of his calling that he has no time to be selfish and to think of things as belonging to himself; but in serving his calling he loses himself in his profession, and his ledger accounts are neglected; and that is the reason why so many of our best operators and and thinkers are so poor.

Now, it must be apparent to every one that there are a great number of persons at this time who have the sign "Dentist" over their door who are totally unfit to practice our profession, and the "examining boards," established by law that has kept pace with our civilization, are the only power that can winnow these out and decide who are dentists. In this strife of the survival of the fittest the hottest battle must be waged. It is so in all nature: those who are best adapted will be preserved, and the others must perish. This law runs through the lower forms of animal life, and is true of ideas and character. It will require the soundest wisdom, coupled with justice, to discriminate, classify, and decide who are valuable and who are worthless. We must expose all hams, with a heart full of love and human sympathy for the good and a hatred for all that is bad. Those who prune with care strengthen the parent stock. It is a law older than man that has decreed that the best must live, and also that when the whole carcass is rotten it must be destroyed. I am aware of the difficulty, and that we shall often be misjudged and blamed; but he who pulls the weeds strengthens the corn, and does it because he loves the corn the best. So we must discuss the merits of men as we would a problem in geometry. If we are wise we shall all put ourselves in training for the work that is before us.

In closing, let me say to those who occupy high positions in the profession, let us hold out the hand of brotherhood to

all meritorious operators, whether educated in or out of the schools—if they are educated—until we are a united whole, never to be broken, whose light shall illumine the world.—*Transactions of the American Dental Association.*

RIGGS' DISEASE.*

By R. B. ADAIR, D.D.S.

In discussing Riggs' disease, I shall not confine myself strictly to physiology and etiology, as per assignment on committee, except to comment on some of the conflicting theories advanced by Dr. Rawls and others, but shall deal more especially with the treatment. Indeed, I do not deem it essential to understand the so-called scientific theories being advanced, to enable us to successfully treat and cure this disease. Some things are past finding out quickly, and may remain a mystery to puzzle the searchers after truth for generations. Physicians grapple with and cure diseases, the cause of which they are in total ignorance. We treat and cure caries of the teeth; and yet the cause is unknown to us. So with Riggs' disease. Let us, therefore, be content to grapple with the disease as presented, and try to successfully treat it. Let the cause be what it may, we will render a service to suffering humanity commensurate with man's capacity, and equal to man's ability to appreciate.

As the name of the disease is yet unsettled, I shall unhesitatingly give the honour to Dr. Riggs, who was the first to advocate the possibility of cure. He has rendered to the profession an everlasting benefit by his efforts in that direction, and I think we ought to thus honour him. His treatment I think scientific and correct, so far as it goes, but he does not go far enough to meet the demands of some cases. Indeed, the whole profession are his disciples as far as he goes. All advocate the general necessity of thoroughly removing all calculus, and everything of an irritating character. Thus far all are agreed, and agreeing with Dr. Riggs in the theory of its being generally of local origin, else why do all advocate, as the very first step in its treatment, the thorough removal of calculus and necrosed bone? It is a settled prin-

* Read before the Georgia State Dental Society, at Savannah.

ciple the cause of a disease must be removed before a cure can be effected ; knowing this fact, they of course recommend the removal of the deposits which cause the trouble. But I think by that very fact some of them contradict the ideas they advance as to its being caused by micro-organisms, being hereditary, or of constitutional idiosyncrasies, or environment. If the calculus, or cause of Riggs' disease, is not there, *why do they all* advocate its thorough removal in every case, as the very first thing to be done towards treating it ?

Dr. Rawls, in his elaborate address before the Southern Dental Association, at New Orleans, stated that "in not a few cases the foregoing manifestations are successively present, and yet *no deposits of calcareous character* are to be *seen or felt*," and then gives as the very first step in his treatment the thorough removal of calculus, and everything of an irritating character. Dr. Rawls also claims in his address that he and Dr. Rhewinkle are the first to oppose the local causation theory, and states that since that time, opinion has materially changed, and to-day finds the advocates of local and systemic causation pretty evenly balanced, and states that even the local theorists are at variance. All of which I deny, and say that the local theorists are in perfect accord, which he admits when, as above stated, he advocates the thorough removal of the cause (calculus), as the first step in his treatment. He further states that when the operation of thorough cleansing has been done, then all has been done that can be of any avail, so far as we are concerned ; other duties devolve upon the patient. He thus admits, in even stronger terms, the fallacy of his doctrine of "environment," by saying that if the cleansing and removing operation has not been thorough, *all the caustics, escharotics, antiseptics, and parasitocides* known to ancient or modern times, in full strength, in solution, in crystals, in granules, amorphous, or otherwise, on cotton, lint or silk, will be of as little use as an attempt to have the surgeon's flap unite over necrosed bone. I ask, in what stronger terms could he advocate the local causation theory ? And why is it he does not give us some treatment in accordance with his "environment theory ?" Like causes produce like effect, and if he thinks the disease

is caused by other than local causes, why doesn't he treat other than locally? The whole truth of the matter is that he has spun out some fine, speculative theories, without having any facts or evidence to substantiate them. His treatment does not amount to any more than that of Dr. Riggs, and of local causation theorists. The profession generally is, I think, ignorant as to a correct diagnosis of the disease, and often mistake other diseases of the gums for Riggs' disease, and hence the great error some of the profession make as to the causation of the true disease. I had a case lately—a young lady about 18 years old—which I think illustrates the mistake some of the constitutional theorists make. She called to consult me about the condition of her gums. She said she thought there was some calculus on her teeth that needed to be removed. I examined her mouth, and a glance only was enough to show that she was salivated. I asked her what she had been taking. She hesitatingly replied, *Bile Beans* (a patent pill.) I asked her what she had taken since. She replied, *lemonade*. Now, in the opinion of some of the environment advocates, this would have been pronounced Riggs' disease, and not a particle of calcareous deposit could be detected on the teeth. I prescribed a teaspoonful of sulphur three times daily, for a day or two, and also prepared a mouth-wash composed of chlorate potash triturated in glycerine, to which was added a little tanin. She got well in about three days, without the use of an instrument.

Dr. B. F. Arrington, in an article published in *Dental Cosmos*, March number, says he has never seen a case of Riggs' disease, *or any disease of a kindred nature, in which the teeth did not hold the cause*. Ptyalism, and many other abnormal conditions of the gums, we know are not produced by any cause held in the teeth, but by drugs administered internally, which act upon the whole economy, and is not Riggs' disease, nor its kindred.

Dr. L. D. Shepard, in discussing a paper read by Dr. Harlan at the meeting of the American Dental Association, held at Saratoga, says that conditions arising from the accumulation of salivary calculus are entirely different from pyorrhœa.

He also said in the same paper that the difference between salivary calculus and pyorrhœa is great, and then contradicts himself by saying that pyorrhœa has its origin at the gingival margin on the ligament surrounding the necks of the tooth. I think Dr. Shepard would have put it nearer right had he said conditions arising from the accumulation of calculus are truly pyorrhœa ; and Dr. Harlan ought to have said that salivary calculus and pyorrhœa are identical.

(To be continued.)

ON THE SIZE OF THE TEETH AS A CHARACTER OF RACE.

By WILLIAM HENRY FLOWER, L.L.D., F.R.S., P.Z.S.

It has long been known that the teeth of certain races, notably those of the Australians, are of superior size, both actually and in proportion to the general stature of the individual, than are those of other races. It is, however, very desirable that some more exact information on this subject should be obtained, and if possible more numerical relations established, by which the amount of variation in the size of these organs in different races may be formulated and compared.

For this purpose I have availed myself of the very large and varied series of skulls now contained in the Museum of the Royal College of Surgeons, including those of the Barnard-Davis collection, and having measured the greater number of them, beg to submit the results to the Anthropological Institute. Even in so large a collection, numbering over 3,000 specimens, those which can be made use of for this purpose are less numerous than might be supposed at first, in consequence of the numbers—in fact, the great majority being defective in their teeth, either from decay or loss during life, or from their having fallen from the skull after death. Complete sets are extremely rare. The incisors and canines, owing to their simple mode of implantation, are most frequently lost ; but the molar series, if complete and sound at the time of death, are in great many cases preserved. Sufficient numbers for deducing any general observations

could, in fact, only be obtained from the latter, and those of the upper jaws alone have been used, because they are more numerous, so many skulls wanting the mandible, and because there is no need to measure both, as the general size of the one is necessarily related to and coincides with that of the other set. I have, therefore, taken as a test of the size of the teeth the length in a straight line (as measured by the sliding compasses) of the crowns of the five teeth of the upper molar series *in situ* between the anterior surface of the first premolar and the posterior surface of the third molar, which length is designated hereafter as the *dental length* (*d*).

The absolute length is, however, hardly sufficient for our purpose in comparing races ; for the size of the individual, and of the cranium generally, should be taken into account, as smaller races and individuals might naturally be supposed to have smaller teeth. It is therefore necessary to find some standard of length as indicating the general size of the cranium with which to compare the dental length. For this purpose I have selected the cranio-facial axis, or basio-nasal length (BN), the distance between the nasion (naso-frontal suture) and basion (middle of anterior edge of the foramen magnum), as being on the whole the most constant and convenient indication of general size. Even in this measurement there is unfortunately an element of variability introduced independent of the actual size of the skull by the inclusion of the roof of the nasal chamber, and the thickness of the lower border of the frontal bone ; but, putting aside occasional individual variations, this is one of the most constant dimensions of the cranium, and if not safe to apply to a single skull, will, if the averages of a sufficient number of specimens are taken, afford a good standard of comparison.

In the average male skull the length is very nearly 100 millimetres ; in the female skull 95. Between the basio-nasal length and the dental length an index can be established on the formula

$d \times 100$

$\frac{\quad}{BN} = \text{the dental index.}$

(To be continued.)

Dental News

THE MEDICAL SICKNESS, ANNUITY, AND LIFE-ASSURANCE SOCIETY.

A highly satisfactory statement of the progress and prospects of this recently founded Society was presented at the monthly meeting of the Executive Committee, held at 38, Wimpole Street, on June 10th. There were present Mr. Ernest Hart (Chairman), Mr. Bartlett, Dr. Clibborn, Mr. Major Greenwood, Dr. Ord, Mr. Sibley, Mr. E. Noble Smith, and Mr. Radley (Secretary).

It appears from the statement made that the Society, which has now been at work only fifteen months, has 674 members, has achieved remarkable financial success, and is in a position of assured and solid prosperity, and active and evident usefulness. The need for its operation, and the good work which it is doing, were shown by the number and variety of claims for sick pay and allowances, which are weekly made and responded to. During the last four weeks alone, thirteen claims have been made for sick-pay by members totally incapacitated from professional work by sickness or severe accident, and the the average weekly payments in respect to such claims have amounted to £27 per week. The causes for claims have been as follows :—Locomotor ataxy, hæmoptysis, pneumonia, rheumatism, tonsilitis, congestion of liver, and three accidents while riding or driving.

The pecuniary position, after fully meeting this legitimate and useful expenditure, was very satisfactory, the reserve fund already amounting to between £5,000 and £6,000 at the end of the first year's operations. This income had been managed with great care, and nearly the whole amount in hand had been invested, under the best advice, in first-class securities, at an average rate of nearly $3\frac{3}{4}$ per cent. interest. Already there were indications that surplus profits would result from this state of things, and such excess, as soon as safety had been fully assured and provided for, would be appropriated among the members, whose absolute property

it would become, there being no shareholders or other outside claims to be met or profits to be paid.

Another favourable result was the low cost of management, the expenditure under this head being less by one-half than even the comparatively small addition of the premiums originally made to meet it by actuarial calculation. Thus, while the current amount available for expenditure under this head was about £160 per quarter, less than half this amount was being spent. This was largely due to the manner in which the affairs of the Society were supervised, without fee or charge, by the members of the Executive Committee who exercised a real and constant control over its affairs, scrutinising its disbursement each week in the most careful and thorough manner, and to the efficiency and economy of the secretary.

Arrangements were being made to introduce some extensions in the work of the Society at the general meeting to be held at Cardiff during the last week in July, and a full report of the work already accomplished will then be issued to the members and the profession generally, with a view to still further increasing the field of its operations. In the meantime, the secretary, Mr. C. J. Radley, of 26, Wynne Road, S.W., will readily supply all information and papers, on application.

EDINBURGH DENTAL STUDENTS' SOCIETY.

At an ordinary meeting of the above Society, held on Monday evening, June 7th, the following gentlemen were elected Officers and Councillors, for Session 1885-6.—Honorary President, W. Bowman Macleod, Esq., L.D.S., Edin.; President, Edwin A. Cormack, L.P.C.P.S., L.D.S., Edin.; Vice President, J. Stewart Durward, L.D.S., Edin.; Treasurer, William Wilson, M.B.C.M., L.D.S., Edin.; Secretary, Frederick Page; Councillors, James Leslie Fraser, L.D.S., Edin.; E. Percy Rose, David Thompson, David A. Cormack.

Correspondence.

[We do not hold ourselves responsible for the opinions expressed by our correspondents.]

A CHAT ABOUT NEW ZEALAND DENTISTRY.

To the Editor of "The British Journal of Dental Science"

SIR,—As perhaps the readers of your valuable journal, at least the majority of them, have no idea of the progress of dentistry in these Colonies, it is my wish to convey a few facts connected with the New Zealand Dental Profession, and perhaps you will do us the honour of publishing a short article from them, which I think would be read with some amount of interest by a number of the profession. Referring to my appointment to the hospital, as you will see, it is the first appointment of the sort granted in New Zealand, and I think I might say in the Australian Colonies. Thus I feel the honour doubly of being the first to start this very desirable office in our hospitals, and I hope it will be followed up by the larger towns. This town, as compared with Auckland or Dunedin, is comparatively insignificant in itself, but we have a large agricultural district to fall back upon, with railway communication to all the inland settlements. The population consists of about 40,000, exclusive of natives, who are becoming scarce, as cultivation progresses they retire further and further inland, some have taken up with European habits and go in for cultivating their land, but as a rule they are not industrious. We seldom have the opportunity for examining their teeth as patients, though an occasional extraction is not uncommon, they appear to suffer a good deal from pyorrhœa alveolaris. As far as my very limited experience enables me to judge, their teeth in general are good and regular and the third molar well developed. Going to another subject, I am not aware if you have ever been informed of the passing of the Dentist Act, in 1880 and 1881. This provides compulsory registration, and since the date of June, 1881 candidates are required to pass an examination under the supervision of the Senate of New Zealand, who are empowered to appoint a Board of Examiners in Dental Surgery for the purpose of conducting examinations and granting certificates. There is at present only one such board held at Dunedin, where all the

examinations up to the present time have been conducted at the University of that city. The Board consists of the following members: Dr. Flocken (chairman), Drs. De Zouch, Marmsell, Scott, Mackley, and Mr. Thrope. They have held for examination since their appointment the first, in April-May, 1883. As in similar cases many took advantage of registration who are totally unfit to practice dentistry. I allude to chemists chiefly, who registered *ad lib.* Time alone can remedy this evil, indeed it is beginning to bear fruit already, as dentistry is becoming more and more considered by the laity a branch of medical science, and the unfortunate dentist of a few years back is not looked upon with that dread and horror as was the general feeling, but is now visited with a certain amount of confidence, and the public are beginning to learn that after all the beneficial results of stopping are preferable to the inevitable forceps of the non-professional. Still I don't wish to lead you to suppose that scientific dentistry has reached its climax, far from that, as in a small village not thirty miles from here a blacksmith is the ruling dentist. Such cases, I am thankful to say, are few and far between.

Your obedient servant,

MORFORD COTTLE.

ANSWERS TO CORRESPONDENTS.

E. J. MARA.—A duly registered dentist is exempt from serving on common juries if he sees that his name is duly removed from the lists suspended on the church doors once a year. If he has failed to do so, he should show his copy of registration to the presiding judge who will probably excuse his attendance.

DENTAL HOSPITAL REPORTS. NATIONAL DENTAL HOSPITAL

MONTHLY STATEMENT OF OPERATIONS FROM JUNE 1st. TO JUNE 28th.

Number of patients attended	1524
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Extractions	{ Children under 14	447
"	{ Adults	572
"	{ Under Nitrous Oxide	502
Gold stoppings		80
Sheets of Gold used independent of Pellets		
Other Stoppings		553
Advice and Scaling		236
Irregularities of the Teeth		230
Miscellaneous		120

TOTAL	2740
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ISIDORE FREDERICK PRAGER, House Surgeon.

British Journal of Dental Science.

No. 421. LONDON, AUGUST 1, 1885. Vol. XXIX.

ON THE LATE DR. MARSHALL WEBB'S METHOD OF PIVOTING TEETH, WITH SOME REMARKS ON MORRISON GOLD CROWNS.

By GEORGE FIELD, D.D.S.

PIVOT TEETH.

In the few remarks which I shall make upon this subject you must not look for anything new or original, either as to forms or methods. My only aim will be to present one or two arguments in favour of a modern and more elaborate method of attaching porcelain crowns to roots, sound or unsound. Much has been said in favour of the old wooden pivots and gutta-percha, and we can bear witness as to their durability, in many cases far beyond any reasonable expectation; but I believe they have had their day, and that in the future those of us who strive to keep up with all legitimate progress will seek something better adapted to the present dental conditions and the requirements of our patients, since both have changed.

As regards the former, are we not safe in saying that the quality of teeth is not what it was? *i.e.*, the present and the rising generations do not present to us so good a quality of tooth substance upon which to build our good works as that which fell to the lot of our seniors. This alone is a very important factor in reference to the wonderful durability of many of the old pivoted roots, and when taken in connection with other facts—as, for instance, that rarely was any other than a sound root pivoted—we have the apparent superiority of the old method fully explained.

They were successes in spite of methods, the same as some gold and amalgam fillings saved similar teeth in the face of shrinkage, looseness, overhanging margins, &c.

*A Paper read before the Odontological Society of Great Britain.

On the other hand, let a few wooden pivots be inserted into roots from which the crowns have been lost by caries, extending into the pulp cavity and canal, so that it is only with difficulty that we can obtain a solid foundation ; and we should find that in such cases the average duration would not be so high as under the conditions first named. It is in the inferior quality of teeth, and under the less favourable conditions, that we claim superiority for the method which I present to-night.

It enables you to strengthen the porcelain crown by building the gold around it in one solid mass from the root canal to cutting edge or cusps ; the same gold is nicely adapted to the end of the root, excluding all moisture, and may be so perfectly finished as to cause no more irritation than a tooth with its natural crown. It is not at all unsightly, as the natural tooth may be so perfectly matched in colour and shape as to defy detection, while no more than a fine line of gold is sometimes discernible at or under the margin of the gum.

To fix such a pivot—we will suppose the root to be in a healthy condition—our first step is to enlarge the canal to as near apex as prudence will admit ; close to the foramen, and still enlarge the canal as much as is consistent with the size of the root and quality of the tooth structure. Grind the end of the root level with the gum, and polish its marginal surface ; fit the porcelain crown to the root and back it with thin gold. For pivot choose either square or triangular gold or platinum wire, and of correct length, sufficiently long to extend to the end of the canal when soldered to the backing. Now place tooth and pivot *in situ*, fasten them there with wax, and remove the whole carefully from the mouth ; enclose in plaster and solder the pivot to the backing. Next, by means of corundum or emery discs, cut a groove on both sides of the porcelain and across the cutting edge, above the backing, into which the cohesive gold must be carefully packed. Having the tooth thus prepared, adjust the rubber dam, and fix the pivot into the root by means of a good quick-setting oxychloride cement, leaving a space of one or two lines between the porcelain face and the root to

be filled with gold. When the osteo is sufficiently hard, remove enough from around the pivot to obtain a firm foundation for the cohesive gold; then proceed to build up the contour of tooth into the grooves already mentioned. When completed, finish with great care, the same as a contour filling, giving special attention to the margins, for this is the weakest point in all our operations upon the teeth.

This is the method introduced by the late lamented Dr. Marshall Webb. I have practised it since he first demonstrated it to me some years ago.

I have not gone into all the details of manipulation essential to the success of the operation, as I do not pose here as an instructor, but have simply aimed at presenting those points or features which characterise it as a special method of pivoting teeth, and I do not doubt that any one who chooses to exercise his manipulative skill would be able to fix such a tooth as I have described.

MORRISON CROWNS.

The advantages claimed for these crowns over a pivot tooth are, first, the ease with which they are fitted to bicuspid and molar roots; secondly, from the firm support given to the root by the closely fitting band and the great strength of the whole combination of band, cement, and pivot, they may be used on roots which would be condemned as useless for ordinary pivoting; thirdly, it restores nearly to its original usefulness the masticating strength of the tooth.

The root should be prepared by cutting down to the gum, removing with a fissure burr any inequalities of the periphery and all the enamel edges. Using a strip of not less than 22 carat gold, of the width that will represent the length of the proposed crown, fit it as accurately as possible to the root, so that when soldered it will fit very tightly. The cap or cusps should then be struck up, fitted and soldered to the band, previously filling up the depressions inside the cap with solder, thus giving sufficient thickness to allow of cutting away, in order to obtain exact articulation with the occluding teeth.

The root canals should be prepared as for the Webb pivot,

making use of similar wire, which should be firmly fixed into the canals by means of cement.

The pivots should extend above the root as far as possible without contact with the crown. The gum having been pressed from the root and all bleeding having ceased, the parts must be kept dry by the rubber dam on the inferior teeth, but napkins may answer for the superior—fill the crown nearly full with the chosen cement; there must be a slight surplus, which, when the crown is fixed upon the root, will ooze out of a small perforation previously made in one of the cusps. One or two smart taps of the mallet, using a piece of pivot wood as medium, will carry the crown well home, and the operation is complete. These crowns are especially adapted for cases where the bicuspsids are considered too seriously decayed to admit of filling successfully; if, instead of extracting them and condemning the patient to the wearing of a plate, you will find the result every way more satisfactory. The steel dies which will be shown you were presented to me by Dr. William Morrison, of St. Louis, and this gold crown was made from one of these dies. Dr. Morrison was the first to introduce this method of capping roots, although there have been since several modifications by others.

EPITHELIOMA OF THE TONGUE.

By FRED. BOWREMAN JESSETT, F.R.C.S., Eng.

Surgeon to the Cancer Hospital, Brompton.

(Concluded from page 630.)

For instance, we read in one paper an account of the difficulties and dangers one operator experienced in removing the tongue by the Whitehead method. In the following week another surgeon states he has never seen any dangerous hæmorrhage arise during the operation performed in this way. Then again one surgeon contends that the écraseur, either wire or galvanic, leaves a lacerated, sloughy wound, which exposes the patient to much greater risk of septic poisoning than if the organ had been removed by incision.

Professor Stokes, in his paper, read at the Clinical

Society in 1881, alluded to the cases operated on by Drs. Schäpfer, and Collis. The former surgeon, in 31 cases in which he removed the tongue by the *écraseur*, had only 3 deaths from septic causes, showing a percentage of only 6 per cent. of deaths; whereas, in 10 cases in which he removed the tongue by incision, he had 6 deaths from septic complication, or at the rate of 60 per cent. Dr. Collis had very similar results, as in 20 cases in which he removed the organ by the *écraseur* he had no deaths, whereas, in 13 cases in which he removed it by scissors he had 8 deaths, or at the rate of 61 per cent. Mr. Barwell has furnished me with the results of his 14 cases removed by the *écraseur*, in which he lost none. Mr. Gant 10 cases removed by the buccal operation and *écraseur*, with no deaths.

On the other hand, Billroth's experience seems to have differed considerably from that of the above-named surgeons, as he has nearly abandoned the use of the *écraseur* and adopted the method of removing the tongue with scissors ligaturing the lingual arteries first.

Mr. Whitehead has, in answer to my inquiries, furnished me with the results of his operations. He has removed the entire tongue 58 times, viz., 41 times by scissors and 10 by the galvanic *écraseur*. Of the 48 cases of the removal by scissors he lost 9, or at the rate of 18.7 per cent., but he explains this apparently high mortality to the fact that he frequently operated upon very advanced and hopeless cases at the request of the patients themselves, solely with a view to remove from the mouth a loathsome mass of disease, and with a prospect of lessening pain. He attributes the deaths of these 9 cases practically to septic poisoning.

The conclusion to be drawn from the above observations are: 1st. In all cases of small nodules or ulcers, seen early that do not speedily improve or disappear by treatment, should be excised as soon and as freely as possible. The best plan of doing this is undoubtedly by means of the knife or curved scissors, taking care to cut well into the healthy tissue. Should any hæmorrhage occur the cautery will usually stop it.

2. The *écraseur* is applicable to the class of cases in which

the disease is limited to some portion of the anterior part of the tongue, and here I unhesitatingly would adopt Mr. Marrant Baker's operation of splitting the tongue down the middle and removing the diseased half by the *écraseur*, adopting his precaution of placing a ligature around the last part included in the wire. Should both sides be affected, I should still split the tongue and remove each part separately, as by this means you can remove the parts much further back.

3. When the tongue substance is thoroughly infiltrated with the disease extending far back, it becomes a question whether the scissors or *écraseur* should be used. If the latter the plan proposed and practiced by Mr. Barwell is, in my opinion, the one by which the best results may be expected, as by it undoubtedly the wire can be placed thoroughly well behind at the root of the tongue. The buccal operation also gives much more room for the application of the wire well around the disease. But the length of time occupied in the removal and the almost impossibility of guiding the wire so as to embrace the whole of the disease, in these cases of extensive disease, appears to me the great drawback to this plan of treatment. Messrs. Whitehead and Billroth's operations have in this class of cases very decided advantages, as they enable the surgeon to keep as clear of the disease as possible, and if care be taken to snip very slowly and keep the mouth well wiped out with dry sponges there is very little risk of hæmorrhage. Care should be taken when approaching the lingual arteries to be ready to seize them with clamp forceps and tie them at once.

I have seen as much if not more hæmorrhage during the use of the *écraseur* as I have during the removal by scissors. I have, however, on one or two occasions seen most violent hæmorrhage during the removal by scissors, and I found it impossible to secure the lingual at the bleeding point and was obliged to tie the artery by external incision; another case at which I was assisting a year ago the same thing occurred, and the patient's life was in serious danger. Mr. Treves also relates a case in the *Lancet*, in which he had the greatest difficulty in arresting the hæmorrhage. Under these circumstances, therefore, when the disease extends at all

within the floor of the mouth it would be always wise to adopt Billroth's method and preface the operation by ligaturing the lingual arteries. The surgeon would then be very much more at his ease and better able to snip away the whole of the disease. He can by the same incision, by which he ties the arteries, also remove any glands that may be affected.

Comparison of Cases of Removal of the Tongue by the Écraseur and Incision.

Showing the relative mortality for each operation.

Schäpfer.	Collis.	Barwell.	Gant.	Whitehead.	Roux.	L'Purcell			
écor., incis.	écor., incis.	écraseur.	écraseur	galv., écor., scissors.	scissors.	scissors.			
No. 31	10	20	13	14	10	0	48	6	6
Died	3	6	0	8	0	0	19	1	1
[Death rt.]									
%	9	60	-	61	-	-	18.7	16.6	16.6

From the above table it will be seen there were 14 cases where the tongue was removed by the écraseur, and only 9 deaths or at the rate of 10.7 per cent., while there were 77 cases removed by scissors with 24 deaths or at the rate of 31.2 per cent.

A case that occurred in my practice which strongly supports what Mr. Treves has met with in his experience of removing the tongue by the scissors. It was the case of a strong, powerful man, who had a fair-sized epithelial ulcer on the left side of his tongue extending somewhat into the floor of the mouth. The man was placed in a sitting position before a good light, and the tongue split down the centre and snipped away with the scissors and quickly removed; violent hæmorrhage ensued and the bleeding point was most difficult to find, as the tissues were all so pliable and rotten that a ligature could not hold, and I was eventually, after many futile efforts to arrest the hæmorrhage, obliged to ligature the lingual artery by external incision. The man lost a very large quantity of blood and died a few days afterwards from septic pneumonia. I would strongly recommend in all such cases as these that the lingual artery should be tied first or the operation which I am about to describe adopted.

I have practised in some cases when the disease is not too extensive a combination of Marrant Baker and Kocker's operations. My reason for adopting this plan is that I consider it most important that all glands, be they ever so slightly

enlarged, should be removed. By making then a large external incision, as recommended by Kocker, the surgeon is enabled to enucleate all glands that came into view. Then if the disease of the tongue is not very extensive, instead of following Kocker's operation further I remove the diseased half of the tongue by the *écraseur* after the plan laid down by Mr. Marrant Baker. By this means I remove all glands and the diseased portion of the tongue without opening the floor of the mouth, which I think is very important to avoid if possible. Should the disease be more extensive and there should be some difficulty in removing the diseased portion of the tongue by the *écraseur*, I should extend my external operation and tie the lingual arteries and afterwards remove the tongue with scissors. A case illustrative of the advantages of this operation came under my care some short time ago.

Case.—A man, *ætat* 45, presented himself with an ulcer on the right side of his tongue the size of a shilling, the tissues of the organ anent were deeply infiltrated, and the disease extended rather far back, about in a line with the foramen *cæcum*. The glands in the neck were extensively diseased. I made in this case a long incision extending from just above the angle of the jaw to nearly the middle line or point. I had no difficulty in removing all the glands. The floor of the mouth being quite free I determined to split the tongue down the middle and remove the diseased half by means of the wire *écraseur*, which was done without difficulty. The wound in the neck and the floor of the mouth speedily healed, and in a comparatively short time he left the hospital.

The surgeons who claim the advantage of the removal of the tongue by the scissors claim for this method those advantages, viz., rapidity of removal, greater precision in removing all the affected parts, and a lesser risk of septic mischief after the operations. The first two points I think they have clearly established, but the latter I cannot find any proof of their having been more free from septic mischief than these cases in which the organ has been removed by the *écraseur*.

Their claim to rapidity and precision in removal I consider

are two most important points, and points which must have great weight with most if not all surgeons in deciding upon the course they should adopt in any given case. If the patient is low and emaciated is it wise to keep him for so long a time under an anæsthetic as is requisite to remove the organ by the *écraseur*? The advocates of this method no doubt will answer at once, Yes! And for this reason: that by this method no blood need be lost. Granted, but I contend by means of removal by the scissors very little blood need be lost if care is taken to snip very slowly and take up the lingual artery directly it is divided, and at the same time you can be very much more sure of removing the whole of the disease.

It is impossible, or well-nigh impossible, in a tongue that is thoroughly infiltrated to guide the wire of the *écraseur* by whatever method may be adopted so as to be sure of the whole or as much as is possible to be removed is removed. Moreover, if Billroth's method is adopted the whole of the diseased portion may be snipped away without any fear of hæmorrhage.

Mr. Barker in a very able paper read before the Pathological Society advocated very strongly the advisability of performing tracheotomy in all cases where the whole of the tongue has to be answered in such cases as I am at present discussing. In this, however, I differ with him. I think it is subjecting the Patient to an extra operation without an adequate compensation in any way for the extra expenditure of strength and vital power.

If, as I have earlier suggested, the tube with sponge connected be introduced into the pharynx or well to the back of the tongue, there is little fear of any blood trickling into the larynx during the operation; and if the floor of the mouth is treated as he has advised by plugging it with gauze soaked in spirit and well dusted with iodoform, I cannot see that there is very much risk of septic possessed afterwards.

Should the disease extend not only into the tongue substance, but also infiltrate the floor of the mouth deeply, then if an operation is to do any good at all it must be done as thoroughly as possible. In such cases undoubtedly the

operation of splitting the jaw in the middle as first suggested by Roux and Sédillot in 1836 and 1844, but perfected by Syme in 1862, or Langenbeck's operation of dividing the jaw at the first molar tooth are the best, in fact the only ones that give any hope of clearing the disease from the mouth.

4. Where the disease implicates the whole of the floor of the mouth, and the gums, the tonsils, and the submaxillary glands are affected, then the only operations which can be expected to remove the disease are either Sédillot's, Regnoli's, or Kocker's, and in some cases when the disease has not extended to the cervical glands either one or the other of these operations may be performed. Here again much discussion has arisen as to the best method of removing the diseased parts after they are separated from the jaw and drawn down through the opening. For myself I think it matters very little; undoubtedly with the scissors the surgeon is better able to remove the disease more thoroughly, but in all these cases it is well-nigh impossible to remove it all. I should prefer the scissors, as the parts can be much more quickly removed and any bleeding parts are then easily taken up and secured.

A man was admitted into the Cancer Hospital with a hard mass of disease quite at the back of the tongue, extending into the floor of the mouth and implicating the pillar of the fauces, tonsils, and pharynx, he had many enlarged cervical glands. He suffered intense pain and had much difficulty in swallowing. After a consultation with my colleagues it was decided to endeavour to remove the disease by Kocker's operation. The disease extended so near the external carotid and internal maxillary arteries that it was deemed advisable in the first place to ligature the common carotid, which was done by extending the upper incision downwards, along the anterior border of the sterno-mastoid. On removing some of the glands the superior thyroid and facial veins were found to be enormously dilated, and it was necessary to divide them. On putting a ligature on to the proximal end, the tissues gave way, and it being so close to the internal jugular vein, it was deemed unsafe to leave a ligature so near to such a large and important artery, so I decided upon placing a ligature around

it above and below and dividing it. Having cleared away all the glands and snipped out all the diseased tissues as far as I could find them, I opened the floor of the mouth, and having split the tongue down the centre as far back as the epiglottis, proceeded to snip out with scissors the floor of the mouth, half of the tongue, tonsil, pillars of the fauces on the same side, and a portion of the pharynx. The wound was thoroughly drained with two large tubes, and the patient fed from the time of the operation by means of a gum elastic catheter and funnel. His temperature kept very high for some days, but he eventually made a thoroughly good recovery and six months after the operation there was no return of the disease.

Lastly in those classes of cases which present themselves in which the disease has progressed so far as to render any operative procedure for the removal of the organ unpracticable and useless. Can we do nothing to mitigate the sufferings of the patient? I think much may be done for him by adopting the method by the late Mr. Charles Moore and also by Mr. Hilton. They divided the lingual nerve where it lies behind the last molar tooth and immediately beneath the mucosa, and in some cases ligatured the lingual arteries. There is no doubt in cases where excessive pain and profuse salivation are among the most prominent symptoms, section of the nerve may be practised with great benefit to the patient. I think it advisable if possible to remove a piece of the nerve as this would prevent any possibility of its reunion. The division of the nerve not only gives instant relief to the intense pain experienced by the patient, but it also gives him great comfort by preventing the secretion of saliva.

SOME RECENT EVENTS CONNECTED WITH THE DENTAL PROFESSION IN ENGLAND.*

By W. H. WAITE, D.D.S., Liverpool, England.

[Read before the Dental Society, of the State of New York, May, 14, 1885.]

Mr. President and Gentlemen:—I should be entirely unworthy of the compliment you have paid me, in allowing me to appear before you, if I did not seize the first opportunity

*This Article has appeared in *The Independent Practitioner*

to express my deep sense of your kindness, and the very great pleasure it affords me to meet once "*in propria persona*," the members and friends of the New York State Dental Society. Further, this being in a sense a public occasion, I desire, as an Englishman and an English dentist, to utter fraternal greetings towards all American brethren, and to acknowledge my vast indebtedness to them, both for many invaluable suggestions and appliances, which have relieved the burden of daily labour, and also for very many additions to the general store of scientific facts, upon which alone we may safely attempt to erect our theories or regulate our practice.

The fame of American dentistry is world wide, but the high character and generous disposition of many American dentists can be known only to those who enjoy social and professional intercourse with them. Speaking again as an Englishman and an English dentist, I am proud to declare that some of the friends I esteem most highly and love most dearly are American dentists.

Gentlemen, it is exactly ten years at this time since I had the honour of presenting you with some not very flattering aspects of the condition of the dental profession in my country. To-day, it is my pleasing duty to report a rapid and vast improvement. It is said that the darkest hour of the night is the hour immediately before dawn. Certainly the period to which I refer appeared the darkest in the history of our profession in England, but dawn was even then approaching. While many were shaking their heads and saying "Men and brethren, what shall we do?" an honest, large-hearted brother of ours in the town of Stockport (Sidney Wormald by name), had long been revolving the question, and had already set himself to the work of answering it.

In August, 1875, a public meeting of dentists was summoned by his invitation, to assemble in Manchester, the most central city in the north of England, for the purpose of considering what could be done to remedy the glaring evils that had become rampant in the dental world.

Up to this time the dental profession was a body without a head, but afflicted with an enormous development of tail.

The Odontological Society of Great Britain had foresworn all but scientific subjects, and there was no apparent means by which the public could be protected from the depredations of uneducated and unprincipled adventurers.

Chaos and apathy divided the honours. Those who might have inaugurated reform remained silent, until the dry bones were shaken by the aforesaid meeting in Manchester.

The outcome of this effort was the formation of a "Dental Reform Committee," composed of representative men from different parts of the country, whose aim was to endeavour to procure some act or legal provision making it compulsory upon all who should hereafter enter upon the practise of dentistry, that they should receive some kind of special education before assuming the title of dentist.

The task thus undertaken was neither easy nor hopeful. The proverbial tardiness of legislation was increased by covert and active opposition. The doctors and the druggists were both alarmed, lest they should be deprived of the innocent amusement of extracting teeth for a small consideration.

Rather than imperil or postpone the whole matter, the executive of the Dental Reform Committee wisely consented not to defraud either the doctors or the druggists of their lucrative and agreeable pleasure, but with a generosity whose wisdom some might question, they went further, and conceded to the aforesaid doctors and druggists the privilege of being allowed, should they so desire, to call themselves "dentists," within the meaning of the schedule.

Eventually, however, in July, 1878, about three years after the Manchester trumpet first sounded the alarm, the "Dentists' Act," passed both houses of Parliament and received the Royal assent.

It may be interesting just to quote the principal clause of this Act, in order that its purpose may be more clearly understood.

"From and after the first day of August, 1879, a person shall not be entitled to take or use the name or title of dentist (either alone or in combination with any other word or words), or of dental practitioner, or any name, title or description, implying that he is registered under this Act or that he

is a person specially qualified to practise dentistry, *unless he is registered* under this Act."

Thus it will be seen that twelve months elapsed after the passing of the Act before it came into operation. This period was afforded to enable all existing dentists to register themselves. After the 1st of August, 1879 (with one or two reservations, in behalf of pupils and colonial practitioners), the necessary requirement for registration was that the applicant should be "a licentiate in dental surgery or dentistry of any of the medical authorities." By this means the door of admission to the practise of dentistry in Great Britain was practically closed to Tom, Dick and Harry, until those individuals should have passed through a prescribed curriculum of study, submitted themselves to a thorough examination, and obtained the necessary license.

Thus a great advance is recorded ; an advance the import of which, both to the British public and to the Dental profession, cannot be exaggerated ; an advance upon the lines of wise and beneficent legislation, the aim of which must ever be to secure "the greatest good to the greatest number."

It would obviously be invidious in a rapid sketch like this to attempt any eulogy, or to pay anything more than a passing tribute of admiration and gratitude. The name of John Tomes is familiar to dentists throughout the world, and it will descend to posterity, associated not alone with laborious investigations in the realms of science, but as the head of this great movement, whereby our calling has been lifted out of degradation into a recognised position. Alongside we must place the well-known and much respected name of James Smith Turner, to whose sleepless watchfulness and untiring energy very much of the rapidity and success of our advancement must be attributed. Thus wisdom and resolute determination were allied, and future generations laid under a perpetual obligation. To these two men, ably supported as they were by the counsel and co-operation of the whole of the committee, belongs the satisfaction of something accomplished in the interest of humanity : not a perfect thing, but as perfect probably as it could be made ; not a present boon, but a broad foundation upon which shall arise

as years roll on, a superstructure of encouragement and stimulus to future practitioners, and of comfort and blessing to the general community. All honour to men who labour to such noble purpose.

Now should we turn aside for a moment, we may notice another event or movement which ran parallel with the efforts of the Dental Reform Committee, though they neither encouraged nor assisted it.

So far back as 1859, permissive power was granted to the College of Surgeons in London, enabling them at their pleasure to examine and confer a license upon dental practitioners. Comparatively few English dentists (200 or 300) availed themselves of this condescension; but a curriculum was carefully prepared, Dental Hospitals began to assume form as schools for students, and some good work was being done, year by year, in the training of young men. The "Dentists' Act" was designed to making this license a *sine qua non* for future practitioners, and if it were allowed to pass without some increased facilities for obtaining the license, an invidious distinction would be created by law between the fortunate possessors of this license and those who, not having been quite awake about the year 1859, had neglected to obtain it for themselves during the years of grace.

The College in London had, with true British dignity, long since closed its doors except to pupils per curriculum, and with real British obstinacy practically refused every appeal for a re-opening. Again our honest friend at Stockport solved the problem, and applied himself bravely to the task. Another meeting was called in Manchester, in May, 1877, to awaken some interest in this matter, and endeavour, if possible, to induce the College of Surgeons in Ireland, or one of the other licensing bodies of Great Britain to appoint an examining board for dentists, and issue licenses.* Meetings on this subject were held in several of the principal cities of England. A strong representation was made to the Irish College, and they wisely took the matter into consideration. A clause was inserted in the Dentists' Act, giving

* All the licensing bodies in Great Britain derive their powers from the English Parliament, so that legally they stand on an equal footing.

authority to each of the licensing bodies to establish a dental department, and immediately upon the passage of the Act a considerable number (some 400 or 500) of English dentists of repute, and of established practice, entered themselves for examination in Dublin, and thus obtained, what in England it was impossible for them to get, a recognised dental qualification.

Perhaps it should be stated that after a while the English College authorities determined to open their doors once more, with saving restrictions, however, for the maintenance of their dignity. Also the Edinburgh College of Surgeons, together with the Faculty of Physicians and Surgeons of Glasgow, all conspired to multiply facilities for the obtainment of a legitimate qualification.

It cannot be denied that herein we mark another decidedly onward step; not that we are of opinion that a diploma is of great value to the practitioner *per se*, but rather to the public, since the possession of it, if honestly obtained, affords some guarantee of fitness for the duties assumed. In England, however, our profession has hitherto held a very ambiguous position; the number of accredited dentists has been very small, and the growth of public demand for such accreditation was, except in some of the large cities, almost imperceptible. Such a movement as the admission of 400 or 500 practitioners to the ranks of qualified men could not fail to make a deep impression. Hence we find that in all hospital appointments the L.D.S. is now an essential qualification; that in seeking for recommendations people are notably disposed to ask, "Is he qualified?" and, best of all, in a professional sense, there has been these late years a marked and very general increase of good feeling and acknowledged recognition on the part of the medical profession.

The importance of the latter fact can scarcely be measured except by those who are well acquainted with two other collateral facts, viz: first, the very high and deservedly respected social status of the English "doctor," and second (whether for good or ill), the intimate association of the dental with the medical profession, the former being now indeed an acknowledged department of the latter. For a dentist to be

recognised at all as above the level of a tinker or a barber is still something in many parts of England, but an immense improvement is rapidly being effected, and this generation shall not pass till our highest hopes in this connection will be fulfilled.

Now, gentlemen, if you are not already weary of "foreign politics," I have yet another item of intelligence which, to American ears, will be more welcome and familiar than either of the foregoing.

The Dentists' Act was passed in the month of July, 1878. The Dental Reform Committee had then performed its functions. The question at once arose, What next? Should the Committee resolve itself into its original elements, or should it use the prestige and influence gained by success, for the future providing and guidance of the now legally constituted dental profession?

Much anxious thought and many diverse opinions were given, but manifold good intentions at length culminated in the resolve to endeavour to organise a permanent association, to be modelled somewhat after the fashion of the "British Medical Association," but possessing enough elasticity to accommodate itself readily to new and peculiar conditions.

Accordingly, in the month of March, 1879, a public meeting of dental practitioners, convened by advertisement in the *London Times* was held in Willis's Rooms, London, for the declared object of converting the Dental Reform Committee into the nucleus of a new association. The day was an eventful one in the history of English dentistry. Hitherto there had been far too much of jealousy and mistrust and apathy between differing sections, and particularly as between the metropolitan and provincial members of our body. If success were to attend any future enterprise, there must be mutual conciliation and mutual earnest resolve to work generously and patiently together.

The venerable leader, John Tomes, respected and trusted by all, presided over the meeting, at which between one hundred and two hundred dentists were present, from all parts of the country. Resolutions gratefully recording past labour, and constituting the Reform Committee into a Repre-

sentative Board were unanimously passed, and with quiet, wistful, perhaps in some instances, questioning spirit, but with much hope and self-devotion on the part of many, the new ship was launched, and ere that meeting separated the dental profession in England had a head placed upon its shoulders, a head connected in a thoroughly liberal and representative manner with every part of the body, and there had come into existence the "British Dental Association."*

Not further to detain you by the recital of history, it will be sufficient to say that though this occurred so recently as 1879, there have come into existence no fewer than six branches of the association in different districts of Great Britain, viz. :

The Midland Branch, founded 1880.

The Western Counties, founded 1882.

The Scotch Branch, founded 1883.

The Eastern Counties, founded —

The West of Scotland, founded 1884.

The Central Branch, founded —

All these are exerting a healthy, purifying influence, by furnishing opportunities of intercourse and discussion upon any or every subject connected with the practice of our specialty. Then we have a journal, the particular organ of the association, and the best journal in England. Besides these, a benevolent fund has been established under the auspices of the association, which is already doing excellent service in behalf of helpless widows and orphans.

The establishment of the British Dental Association marks a new era in the dental profession : it is not only an advance but it is a new departure. Organized upon a thoroughly broad and representative basis, sanctioned by the approval and authority of government, offering inducements to all and exclusion to none who desire the real elevation of our calling, affording through its various branches occasion for exercise and development of latent power in each section of the

*The objects for which the association is established are the promotion of dental and the allied sciences, and the maintenance of the honour and the interests of the dental profession. (See Articles of Association, page 1.)

country, the British Dental Association promises to exert a mighty renovating influence upon all our future progress.

Though but six years old, the association already embraces a large number of qualified and reputable dental practitioners in England and Scotland, with not a few from the Sister Isle. Those who for many years have occupied high positions in London and other large cities have generously supported the association from the first, and as a matter of fact, the British Dental Association includes (with very few exceptions) all the best dentists in Great Britain,

We want it to be understood that the future position and progress of dental surgery in the British Isles is committed to the care and entrusted to the guidance of the British Dental Association, and that the British Dental Association is the direct, the sole, the responsible representative of dental surgery amongst us.

Gentlemen, my sketch is a very rapid and cursory one; circumstances have rendered it impossible that it should be otherwise, but I am not aware of having omitted any important fact.

To tell you of the self-denial, the unwearying labour, the anxious and sometimes doubtful thoughts, the many bitter discouragements, as well as the pleasurable disappointments attendant upon these several changes, would be an impossible undertaking.

To picture before you the imperfections, the indifferences, the selfishness and jealousy still existent, would be now an unprofitable task.

My purpose in this very hasty and imperfect review has simply been to make you acquainted with plain facts, accomplished and present, in the dental profession in England, and in conclusion, let us hope that whether at home or abroad, wherever our services may be required, the members of the dental profession will ever be found able, willing, and devoted to the noblest of all labour, the relief of human suffering, and the increase of human comfort and happiness. Whatever the surroundings or circumstances of our calling may be in particular countries or districts, I am sure we all feel

that dental practice in itself affords scope for the highest intellectual power, and the purest moral principle, and that for us all, the wide world over, our standing before men will ever depend, not upon legal enactments, nor combinations for self-defence, but entirely and alone upon individual knowledge and skill, exercised under the control of individual integrity and self-renunciation.

A selfish man cannot long retain the esteem of his fellows, but a simple, steadfast, unflinching purpose, consecrating every power, every resource, to the general well-being of those around, can never fail to exalt the individual, and through him the profession to which he belongs to the highest rank of public opinion.

THE INTERNATIONAL MEDICAL CONGRESS.—At the late meeting of the American Medical Association, the authority granted to the committee appointed to invite the Congress to meet in Washington in 1887, and to make arrangements for the meeting, was virtually revoked, and a revisory committee was appointed. The original committee had been authorized by the Congress in session at Copenhagen, in 1884, to proceed with the arrangements, and when the invitation was accepted it became the committee—not of the American Medical Association, but of the International Congress,—and hence the American Association was wrong when it assumed to overrule and revise its action. If this were not so, then the Congress has no permanent existence and no continuing committees. But the “outs” were determined to become the “ins,” and hence the mischievous action at New Orleans, which must prejudice the success of the whole meeting. The committee appointed at New Orleans is in session at the time of writing this paragraph, and a telegram informs us that it has dropped the section of Oral and Dental Surgery entirely. Probably it is as well, our contemporary *The Independent Practitioner* thinks, for dentists will be spared participation in a professional squabble that could not have proved entertaining or profitable.

British Journal of Dental Science.

LONDON, AUGUST 1, 1885.

THE RECESS.

WITH the hot months of the year come thoughts of holidays. The mind ranges at will over the wide, wide world of possible August elysiums, while the jaded body eagerly presses its claim for rest and recuperation. The air is thick with din of impending professional meetings coming closely upon the dying notes of last sessional meeting of the Societies, the hospitals are gradually emptying, and all who can are making final plans for the summer holiday. We find, however, that but few appreciate the moral obligation of this abstinence from work, and fewer still understand how best to avail themselves of the scant fortnight or month which an all jealous profession permits. Those who care to turn over our pages will find that in a series of papers we presented before our readers a development of the highly important subject of personal hygiene. We now return to this topic from the standpoint involved in the consideration of the autumn holiday. These papers deal with matters which were ably but briefly mapped out by Mr. Oakley Coles in a paper contributed to the Transactions of the Odontological Society. Mr. Coles summed up the burden of a somewhat mournful tale by showing that slowly and surely the daily strain on men's minds and muscles revealed itself by an all too early death or premature retirement from the duties and necessities of their arduous calling. And while it was attempted in these papers to show that dentists should daily be on the lookout for the many dangerous pitfalls which beset him, yet it would be argued that taking his profession at its best the dentist was daily leading an unsanitary life which necessarily would find out the weak points in his constitution. Now it becomes our duty to point out that one of the greatest safe-guards the dentist has is a set period each year when he can retire completely from all professional matters and for the nonce forget that he is a dentist. The perfunctory getting out of town,

which in so many cases has to serve its turn instead of a holiday proper is of little value. What is needed is an entire and absolute change alike of scene, associations and habits of life. Whether such a radical cure for the shattered nerves of overworked dentists is always to be had, will by some be questioned. The elastic rebound is wanting, and with it the energy needful to arrange some novel mode of passing the autumn recess. It still remains, however, open to all to at least make an endeavour to deviate from the beaten tract. 'Cycling has been spoken of as a valuable means of getting exercise, but to its use during the work-a-day year the objection is raised that it unsteadies the hand and fatigues even before the daily routine of office practice has commenced. Now however valid such an objection may be against 'cycling under these circumstances it does not apply in the slightest degree against the autumn holiday. If a wise moderation be used few, if any, need fear the slight strain and stiffness incident upon commencing any new muscular exercise, and certainly none need refrain from tricycling because "they are out of training." A well arranged route, coupled by the aid of an ordnance survey map and a cheerful companion will be about all the *débutant* needs, with these he ought, unless he is very unfortunate or very perverse, to be able to spend a most delightful holiday.

Now we may hint that the result of some such trip can only prove beneficial, not immediately only but remotely, by increasing alike the ability for future work as well as improving the quality of such work. Whether holiday meetings of learned societies and professional associations be really a progressive and not a retrogressive movement we will not attempt to enquire, that such meetings furnish a valuable means of men together for interchange of mutual friendly offices, and social communion is admitted on all hands, still such an end could be attained without the multiplication of papers, discussions and prolix disputation. These accessories, so cheerfully tolerated or ignored by the majority of those who attend those gatherings, mean, however, a vast expenditure of labour, self-sacrifice and mental strain and worry upon the officials whose duty it is to cater

for the literary appetite of the assembling savants. The successful carrying out of a meeting will under all, save any exceptional circumstances, entail the loss of a holiday upon some, it may be all of the office bearers. No light penalty to pay for a "secretaryship *pro tem.*" We do not wish in any way to seem to cavil against these autumnal gatherings, indeed we hold that they have their uses and are valuable in some ways, but we desire earnestly to caution the hard-worked practitioner against being mulcted of a holiday, one which he must have if he is to thrive and if he desires to maintain the standard of excellence in his work during the working months which will only too speedily return. Social holiday clubs, when men of the same interests, at one in sympathy, aim and purpose of life, might well be more common. Possibly some of our readers may be unaware of an association of Sunday walkers, whose bond, a very real and unbreakable one, is that they pledge themselves to refrain from work on the first day of the week, and instead they start off atramp, ten, twenty, or thirty miles. Were an autumn holiday association to be started whose business it would be to furnish hints for travel, and to pair off men anxious to journey in the same lines, we feel sure there are many who recognise in it a distinct and valuable aid. Besides the services such an association could furnish about ways, means, and the countless details of a tour such as men want information about, it would constitute a bond of union among hundreds and be the means of bringing old associates together, of renewing friendships, and initiating new ones. When one thinks that dentists are stationed in most towns and large villages, a machinery of local secretaries seems ready to hand, a central depot and a few travel-tried and skilled organisers would easily set the ball a-rolling, and the thing is done. We have, however, departed from our text, that all need a holiday. Another view comes up which is involved in what went above, and that is that men must be trained to widen their interests, to find delight in the sights and sounds of nature, to seek with untiring zest the secrets of the earth. The eye of the artist, the ear of the musician, sees or hears when more dulled senses are innocent of any sight or sound. Then let us re-

member that these faculties are to a great extent the result of training and so within the grasp of all, and that those certainly are the most capable of enjoyment whose widest interest is greatest, and for such the autumn holiday possesses the most assured means of recuperation.

DENTAL HOSPITAL OF LONDON.—The Annual Distribution of Prizes amongst the students of this institution took place at 5 p.m. on Friday, the 24th inst., at the Hospital, in Leicester Square, Sir J. Risdon Bennett, M.D., F.R.S., in the chair.

AMERICAN DENTAL ASSOCIATION.—The twenty-fifth annual meeting of American Dental Association will be held at Minneapolis, Minn., commencing Tuesday, August 4, 1885. The present prospects are that the meeting will be an unusually large one. Among the trips arranged is one to the Yellowstone National Park, the scenery about which is described as ranking among the most beautiful in the world.

CAN THE LICENSING BODIES CHECK ADVERTISING?—*The Journal of the British Dental Association* says: Both at the meeting of the Midland Branch at Nottingham and at the Scottish Branch at Dundee, some discussion took place with reference to the powers which the licensing bodies possess to check advertising, and other unprofessional practices amongst those to whom they have given diplomas. As regards the Irish College at all events, there can be no doubt whatever on this point. Every licentiate of that College, before receiving his diploma, signs the following clearly worded declaration, and had all the other licensing bodies adopted the same plan there could have been no grounds for any discussion. Considering the discredit reflected on them by the acts of some few of their licentiates, it is possible they may yet find it desirable to exact some such undertaking in the future. "I

of

hereby declare that I am twenty-one years of age, that so long as I hold the diploma in Dental Surgery of the Royal College of Surgeons in Ireland, I will not attract business

by advertising, or any other unbecoming practice ; and that I agree that such Diploma shall be cancelled on it being proven that I have done so."

PATENT MEDICINES.—From the reply given by Sir H. Holland to a question put by Mr. Warton in the House of Commons, it would appear that the present Government intend to put into immediate operation the reforms in the administration of the Stamp Act in regard to proprietary medicines promised by Mr. Childers. Henceforth the Government stamp is to bear the words, "This stamp implies no Government guarantee." In this way, one of the most mischievous results of the Act will be obviated. The alteration will come into effect within the next two months, and we cannot but feel grateful, says the Editor of *The Journal of the British Medical Association*, that the legislature has acceded to the arguments used, though regretting that the remedy has not been more drastic. The present, perhaps, is hardly a moment to expect a Chancellor of the Exchequer to forego any source of income, and in reality very much now depends on the way in which the Act is administered under the new regulation : if the term "proprietary" is in future understood in a liberal sense, so as not to include legitimate pharmaceutical preparations, some of the chief objects aimed at by the Association will have been attained.

AN UNUSUAL CAUSE OF SALIVATION.—Attention is called in a contemporary to the pressure exerted in some cases by imperfectly fitting dentures upon the sublingual glands and as a result an increased secretion of saliva. Although the matter is not new yet it appears in some cases to have been overlooked and the salivation put down to the material used in making the denture blamed or the hypersecretion regarded as symptomatic.

DR. FRANK B. DARBY, of Elmira, N. Y., has recently introduced a "Capsicum plaster" to take the place of the "Capsicum bag" so successfully used during the past year. Dr. Darby's improvement, says the Editor of *The Dental*

Advertiser, consists in placing the same ingredients as contained in the bag on a soft, flexible rubber-coated felt, of suitable size, forming a "plaster" which readily adapts itself and will stick to the gums and remain in position. Their use is indicated in all cases of pericemental inflammation and pulp irritation, such as pain or tenderness about the roots of dead teeth, soreness caused by prolonged gold operations, wedging, or other causes. In fact, any tenderness or inflammation about the roots of teeth, is claimed to be relieved by the prompt application of this plaster. Very favourable reports have been received from those who have tried both "bag" and "plaster" and in all instances the plaster has been given the preference.

THE current number of the *Dental Advertiser* narrates how the printing offices of that useful periodical have twice been consumed by fire.

DR. THEODORE G. LEWIS, editor of *The Dental Advertiser*, had a narrow escape in the burning building, and is it a noteworthy coincidence that he was one of the last to leave the *Commercial* building, when it was destroyed by fire in December, 1882. The Doctor thinks he has had his share of fire experiences in printing offices. Last evening he was in the job office of the *Express* on business, and was conversing with the foreman, when there was a sudden rush, and a cry of fire. The Doctor started down the stairway on Exchange Street side, but was driven back by the flames and smoke. He then recollected that a stairway leading to the roof was close at hand, and instead of going down he went up, reaching the roof in perfect safety.

Reviews.

The Principles and Practice of Dentistry, including Anatomy, Physiology, Pathology, Therapeutics, Dental Surgery and Mechanism: By Chapin A. Harris, M.D., D.D.S., Revised and Edited by Ferdinand Gorgas, A.M., M.D., D.D.S. Eleventh Edition: J. A. Churchill, London.

If proof were wanting of the great increase of our knowledge about dental surgery which has taken place during the

past ten or twenty years, the volume before us would furnish one, and one which would be uncontrovertible. The great disadvantage of modern textbooks is their ever-increasing bulk, but it must be admitted that in the present case that no curtailment of the book could have been attempted without seriously marring its completeness. In the elaboration of the work a very great deal of care has been taken to keep *practical bearings* steadily in view, and the result has fully justified the stress laid upon the purely technological side of dentistry. The tendency, so characteristic of writers of the day, to ride their favourite hobbies threadbare in print, is happily no fault of Dr. Harris, or of the present editors; and the manual, although fully up to the time in giving the theories which are at present in vogue, yet avoids either foisting mere hypothesis as fact or investing plausible theory with the weight which belongs alone to established fact. The mechanical side of dentistry in which we need so much guidance, is fully and well treated. It may be said that no bookwork will ever make a man a mechanical dentist, nor indeed will any royal road be found save patient and persevering toil. But it is equally certain that without minute and accurate instructions the mechanical dentist will constantly be brought to a standstill. As far as the present work goes, and it goes a long way, it is remarkable for clearness and accuracy. It would naturally be assumed that its skilled author's personal attribute would ensure such a result, and such an assurance is in his case well founded, but we venture to think that such is not the general rule. It very frequently happens that a clear thinker, a skilled worker is a poor teacher, failing to grasp difficulties; he takes no pains to elucidate or to fill in the different links in the chains of his reasoning, and so is as unintelligible as the Sphinx. Now Dr. Harris is quite the reverse of all this. His style is clear, free from wordiness, and pleasant to read, while the arrangement of matter is upon the whole judicious and conducive to the reader's comfort. The scope of the book is such as to make it more one of reference than solely a manual for students, and it possesses the advantage that those who have once acquired it will not find it mere "library litter" when once it has been read from cover to

cover, but a friend whose aid and advice must be often sought to be fully appreciated. The book is already so widely known in England that we need only recommend those who have not as yet come across it to do so at the earliest opportunity, feeling assured they will not regret their action in so doing. The manual in its present edition (the eleventh) is edited by Dr. Gorgas, who may be complimented on the way he has executed his task. Under his hand the book which was always valuable, has increased alike in utility and practicability.

The amount of new matter is very considerable, including the development of the bones of the head and face ; temporo maxillary articulation ; description of mucous membrane ; the origin and development of the teeth ; analysis of tooth structures ; secondary dentine ; dentition ; calcification and decalcification of the teeth ; alveolar pyorrhœa ; aphthous stomatitis ; thrush ; sanguinary calculus ; mal-formed teeth ; effects of syphilis upon the dental structures ; caries of the maxillary bones ; sensitive dentine ; theories as to the cause of dental caries ; treatment of dental caries ; new methods, materials, and treatments employed in filling teeth and other operations ; electric mouth lamp ; electric mallet ; dental engines and attachments ; rubber dam appliances ; treatment and appliances for correcting irregularity of the teeth ; contour filings ; re-plantation and transplantation of teeth ; different methods of inserting artificial crowns on natural roots ; bridge work ; general and local anæsthetic agents ; improved forcep ; new materials and trays for impressions ; articulators ; blow-pipes ; furnaces ; celluloid ; new apparatus for vulcanizing rubber and moulding celluloid ; repairing vulcanite ; duplicating dentures ; theory of vulcanising ; regulators : gold alloy and other cast bases ; temperament in relation to natural and artificial teeth ; improvements in porcelain teeth ; new splints for fracture of the jaws ; etc., etc., etc. The work is wholly commendable, if not indispensable for the modern day dentist.

Abstracts of British & Foreign Journals.

DENTAL COSMOS.

A METHOD FOR PRODUCING THE KINGSLEY CLEFT-PALATE VELUM.

By C. S. CASE, D.D.S., M.D., Jackson, Mich.

Commenting on the literature of cleft-palate and its treatment, Dr. Case finds the fullest accounts in "Oral Deformities," by Dr. Norman W. Kingsley. The introduction of flexible rubber vela for congenital cleft, and the peculiar shape adapting them to the requirements of the bifurcated uvula and velum palati for best restoring speech, was mainly due to him. The directions for the mechanical construction of these vela are, however, so incomplete in specific directions that only dentists of considerable ingenuity and mechanical skill are able to follow the author's directions. Dr. Case's method was founded upon Dr. Kingsley's practice although not on his description.

Dr. Kingsley may use a superior system; he certainly has not given one in his work or elsewhere.

Dr. Case insists that artificial vela should be as perfectly adapted as artificial denture of any kind; and while the flexibility of the rubber admits of their being tolerated when imperfect, yet the rudimentary muscles cannot use such vela as they would specially constructed ones.

There are other advantages to be derived from individual *metallic* moulds, the regulating the size and flexibility of the velum. The first one also can be made with the posterior portion or *veil* thin, soft, and abridged, so that it will be tolerated by the mucous membrane of beginners; and by simply scraping away a portion of the metal, subsequent vela can be thickened, extended, and made more inflexible as the parts become accustomed to their use.

In taking the impression, obtain a model of that portion of the mouth where it is intended that the velum shall closely fit,—i. e., the oral surface that is to be covered by the lateral wings of the velum, and the entire borders of the fissure through the hard palate. Absolute perfection beyond this is

not material. Instead of the ordinary impression tray, Dr. Case uses a piece of block tin 6 in. long, tapering from an inch to half an inch in width, with the edges wired to stiffen it. This is bent like an S, so that while grasping the wide end the narrow one will lay along the fissure; the narrow end is warmed and a small portion of No. 3 modelling composition attached, having been softened by dry heat; after this a sufficient quantity of No. 1 to fill the fissure is added, that portion of the oral surface that is to receive the artificial palate is covered and the mass softened in water and introduced. It is removed immediately, and the surplus cut away, having again softened the surface and introduced, the patient swallows repeatedly. The velum palati thus takes a perfectly natural position in the act of swallowing, and obviates the tendency to involuntary contraction of the palatal muscles.

In preparing this composition impression for the final one in plaster Dr. Case shapes the posterior portion not to touch the velum when in position so that the plaster will adhere to the surface when roughened, all that portion which has passed above the nearest approaching borders of the fissure is cut away, leaving the cut surface smooth. When this is covered with plaster and re-inserted, that portion which has passed above the fissure will be cut off from the lower, because the upper edges of the composition have been left so that they touch along the borders of the cleft, and therefore, upon removal, this portion of the plaster will readily cleave from the smooth surface of the composition, after which it can be rescued and restored to its position on the impression.

The plaster is mixed in warm water, and stirred, then introduced quickly. When the plaster *commences* to harden, the patient has to swallow and hold the breath for some time. This will often fix the muscles in one position long enough to obtain a correct impression of the approaching borders of the soft palate and uvula.

The plaster model should be made as small as the required strength will allow for convenience in handling; the nasal and pharyngeal portions of the cleft open, and unsurrounded. All superfluous plaster is cut away from the posterior ends; the upper surface trimmed on a line with the proposed upper

surface of the palate, and the lower one-eighth of an inch below the edges of the lateral wings. The posteriorly approaching borders of the cleft, which represent the bifurcated edges of the velum palati, must be made parallel, so that the model of the palate can be easily removed and re-adjusted while it is being fitted to the mouth.

Dr. Case turns the thin lateral portions of Kingsley's palate "wings" and the posterior portion "the veil."

Dr. Case fills the fissure of the plaster model with a piece of softened modelling composition, spreading it on each side over the oral surface to form the wings, and shapes the veil posteriorly, according to the size and shape of the pharynx; to be corrected after trial in the mouth. This is done with thumb and fingers, the composition being softened in warm water. The model of the velum is fixed by a wire and tied in the mouth. Repeated trials and returns to the plaster model obtains the proper shape. Dr. Case prefers to curve the posteriorly end of the veil *upward* instead of downward (as Dr. Kingsley does) a thin veil will retain its shape in this way much longer, the curve acting as an additional spring.

Dr. Case prefers modelling composition to gutta-percha because it is sufficiently tough and can be easily shaped, scraped, and polished. He only cares about the shape of the inferior surface and borders.

The models of the velum being prepared and placed on the plaster model plaster casts are formed round it that can be duplicated in metal. To do this he uses a peculiarly constructed flask, which is made smooth and bevelled from the centre, on the inside, so that casts in plaster or metal can be easily removed by lightly tapping the side. The plaster model is cut so that it will pass into the upper part of the flask, this being the side that receives the cover and holds it in place by the guide-pieces at the ends; also, the depth of the bevel is greater to admit of the larger bulk necessary in this portion of the model. The model is fixed so that the velum will take a central position in the flask, with its oral surface beneath the heart-shaped opening in the cover. The anterior apex is placed away from the pour hole, so that the metal can

be poured from the other end of the palate, as air holes will be less liable to injure important parts. The bevelled surfaces are polished and oiled each time before pouring the plaster. Dr. Case roughens the posterior ends of the model and adds fresh plaster to one side, extending it along the inferior surface of the veil to its centre. When this is hard, he lubricates the surface and fills the other side to meet it in the same manner. By using very thin plaster at first, with a camel's-hair brush pencil, the added portions adhere more firmly, and it is easier to fill the spaces which have been cut out on each side, between the wings and the upper part of the veil, for the bifurcated edge of the *velum palati*. (It may be easier for beginners to put on the posterier extensions of the model before putting it in the flask.) The plaster is trimmed even with the upper edge of the flask, and on the inside so that its outer edges will stop at the central bend in the bevelled surfaces, any covering the superior surface of the *velum* is removed, the plaster shaped as is done preparatory to "pouring up" for a set of teeth. For this purpose it will be more convenient to remove it from the flask. He removes the *entire model of the veil* which was left thick and unfinished on its upper surface; the remaining nasal surface is finished and bevelled posteriorly on a line with the plaster that represents the inferior surface of the veil; lubricate the surface, and poured. He adds: Invert the flask and bevel the plaster from the outer edge of the palate, cut the posterior portion of the surface so that the plaster where it meets the *velum* will present as strong an angle as possible, and fill for centre-piece. The model of the artificial palate is now completely surrounded with parts in plaster, one of which contains the original model of the mouth, and when this has been separated with a thin saw, at its anterior end, the palate can be removed.

Dr. Case recommends duplicating in plaster in making the metal moulds.

(To be concluded.)

THE JOURNAL OF THE BRITISH DENTAL ASSOCIATION.

PREPARING TISSUES FOR MICROSCOPICAL EXAMINATION.*

By FRANK HARRISON, M.R.C.S., L.D.S., Sheffield.

The tissues to be examined [foetal kittens] were in one case placed directly into a solution of bi-chromate of potash ($\frac{1}{2}\%$) to harden, in others in a saturated solution of picric acid, to decalcify the bone and harden the soft tissues. In working upon large masses of material careful subdivision must be practised before hardening. The mass is, when hardened, washed and put into spirit which will preserve it for future investigation. In the next stage the tissue is placed in a solution of gum, a little carbolic acid added to prevent the formation of fungous growths. The tissue should soak for 24 or 48 hours. Delicate structures must be frozen in the gum and while in this condition sectionised. A microtome of some kind must be employed. Swift's ice and salt freezing microtome or Cathcart's ether freezing microtome may be used.

The substance to be cut is placed, together with a little gum, upon a zinc plate, under which an ether spray is working. Two parallel glass slabs are fixed, one on either side of the zinc plate, which act as a rest for the razor or plane iron to glide upon, which, with the frozen tissue upon it, can be raised by turning a milled head-screw, and the tissue cut by sliding the knife, coated with spirit and water, along the glass slabs. A fine section of the tissue will now be found on the knife, and should be carefully washed off with a camel-hair brush and a free supply of spirit and water into a shallow vessel containinig distilled water. The nests of cabinet saucers used by architects are very useful receptacles for the sections. When one saucer is filled with them another may be superimposed upon it, and will be ready to receive more sections, and also perform the function of keeping those in the lower saucer free from dirt until time can be devoted to mounting them.

The whole of the water with the gum and picric acid in solution may be removed by means of a small syringe, leaving

* Read at the Annual Meeting of the Midland Branch at Nottingham.

the sections almost dry on the bottom of the vessel. Distilled water is now added and the process repeated until the sections are quite free from gum and acid. The washing should not be continued for long if we wish to retain the picric acid as a staining agent.

A few drops of picro-carmin or logwood should be added to the water containing the sections, care being taken in the case of logwood to filter before using. The sections will stain rapidly or slowly according to the strength of the staining substance used. When the sections are sufficiently dark in colour the staining fluid may be drawn off by means of the syringe as before described, and clean distilled water substituted. The sections are protected by a lid from any dust.

A clean round cover glass held between the nibs of a pair of foil carriers is dipped into the water containing the sections. With a fine gold needle inserted into a camel hair brush carrier held in the right hand the water is drawn over the upper surface of the cover. The selected section has the cover brought close to it, and then the section slightly tilted with the gold wire while the cover glass is passed under the section so as to float it upon the cover. The glass cover is removed from the water, the gold wire holding the section in place until its upper edge is out of the water. If the section is not flat on the cover, it may be re-floated and brought into proper position. Place the cover on one end of a clean glass slip, and examine it with a low power under the microscope to see if the section is worth preserving, if so, drain off the water from the cover with blotting paper and add two or three drops of absolute alcohol to the section. After the spirit has remained on the section for a few minutes, it will have abstracted any water which was left by the blotting-paper and may be removed in the same way as the water itself. Two or three drops of oil of cloves, dropped from a drop bottle upon the section will clear it and remove any spirit which may have remained. The excess of oil of cloves is absorbed and one or two drops of Canada balsam placed upon the section.

Literary Notices and Selections.

RIGGS' DISEASE.*

By R. B. ADAIR, D.D.S.

Concluded from page 667.

Dr. Wm. H. Atkinson, I believe, is about the only one who gives us any reason at all why they treat (further than the necessity of cleaning.) He claims that great numbers of micro-organisms are to be found in the pockets, and around the gums affected by Riggs' disease, and that it is for the purpose of destroying these that he treats at all; which I think is a little in advance of the other caustic or escharotic advocates. So far as these micro-organisms, or parasites, are concerned in the production of the disease, I think they may be there, and in large numbers, but they are invited there by the same influence that causes them to operate in caries of the teeth. We are told that if this carious part of a tooth is examined by a microscope, myriads of these organisms are seen, and by some are said to be the cause of dental caries; but we know that wherever food finds a lodgment, and remains a sufficient length of time for the fermentive influence of the saliva and animal heat to cause it to decompose, there we find the micro-organisms, whether it be in the decay of a tooth, or in these open pockets around the teeth, and hence have no more to do with the cause of disease in the one case than the other. Still, I think it well enough to kill them, if you can without destroying the gums and injuring the teeth; but better *clean* them out entirely, as you do in the operation of filling teeth, and then stop them out, and not let any more carcasses get in there for them to prey upon.

Without discussing further the views advanced by different men, I shall preface my remarks by saying, that from the most careful observations that I have been able to make of the causes concerned in the production of this fearful disease, I am decidedly of the opinion that it is strictly of local origin, and produced by the irritating influence of calcareous deposits, and may be frequently aided by other irritants, such as dead and abscessed teeth, &c. Treatment previous to the

stage of pus formation ; no further treatment is necessary than the thorough removal of all calcareous matter ; leave nature's clot to do the balance of the work, giving strict instructions as to the importance of keeping the teeth clean, by the use of brush, quill tooth-pick, and floss silk. The brush should be very soft, to commence with, and the patient directed to brush up and down, instead of across. A stiffer brush may be used after the gums heals. If there is much inflammation and foeta, the following preparation, as a mouth-wash, will meet the requirements :—

R.

Chlorat. potas.	3ij
Trit. in glycerine	3j
Tannin	3j
Aqua.	3j

M.

Direct patient to use teaspoonful three or four times daily, in a little water. If the disease has not reached the pus formative stage, and your patient obeys instructions, a cure is certain ; but if advanced that far, and pockets are formed, the treatment will have to be extended, and other remedies used which will hermetically close the pockets, and keep them closed until new cells and tissue are formed, and protect them from being destroyed by the friction of mastication, and the forcing of food and foreign substances down in them. This very valuable treatment I now propose to give to you ; and after several years' constant use of it in my practice, I feel no hesitancy in recommending it as the best and the only treatment known to the profession at present that will accomplish the purpose, not only of a cure but new bone and new gum can be re-produced where destroyed by the ravages of the disease. The difficulty of thoroughly protecting these pockets from irritating substances being forced down in them, and keeping them hermetically sealed, I think you all will admit, has been the great barrier to successful treatment. To Dr. Lyman, of Ohio, who spent a few days in our town some years ago, I am indebted for the first idea of a remedy that would successfully accomplish the desired object.

I report a very severe case. The patient, a lawyer by profession, age 36, has always lived on a vegetable diet alone, except a short time he spent five or six years ago in Colorado, mining gold, where he could not get vegetables often, and had to live on meat and bread. His constitution is remarkably good ; he has never had any hereditary or other disease of any kind ; he has never taken any medicine in his life. His teeth are well developed ; in fact, very hard. About two years ago, his gums began to suppurate, and his breath became foetid. The right superior lateral incisor and first bicuspid became more involved than any of the other teeth. He consulted dentists and physicians about it, and all told him there was no cure for it, and that he would have to lose two teeth. About a year ago, he returned to this State, and I began to treat him. He has been rather an exception to the rule as to punctuality in carrying out directions, and also in meeting every appointment. When I made a thorough examination, I found the bone on the labial portion destroyed to near apex of root of lateral incisor. The septum between the first bicuspid and cuspid, and part of way around palatine surface of first bicuspid, was entirely gone, to apex of root. Each was an open pocket, with pus oozing out, of a very offensive character. These teeth were so loose that I could have pulled them out with my fingers. I found necrosed bone, which I removed, and scraped the edges of the living portion thoroughly. I then removed the calculus, which was very abundant. During this operation, and even before I commenced, I had him rinse his mouth occasionally with a solution of permanganate of potash, about the colour of a rose-leaf. This, beside being one of the best disinfectants, is slightly astringent, which makes it valuable for the first operation. The breath in this case was very foetid (and I will parenthetically remark that the peculiar odour is an unerring indication in diagnosing a case of Rigg's disease). If you ever smell a genuine case of Rigg's disease once, you will *never forget it*, and will not easily be deceived by it again. It required three sittings to thoroughly remove the tartar. When the treatment was begun, by applying a solution of crystal iodine in creosote, with an old instrument wrapped

with cotton, painting all over external surfaces as far as any clearly-marked indications were seen ; also inside the pockets and down to the bottom of them. Previous to applying this, it is necessary to have the cheeks and other parts of the mouth protected by a napkin, and the surfaces to which the application is to be made perfectly dry, and freed from all foreign substances. The pockets should be syringed out and then dried thoroughly. Flow all over the painted surface, and down into and fill up the pockets with a preparation composed of tanin, 3ij, to which add about 20 or 30 drops of glycerine. This is also applied with excavator, previously wrapped with clean cotton, napkin removed, and the saliva coming in contact with the tanin preparation, instantly forms a tanate of albumen, or a leathery coating, which thoroughly seals and protects the pockets, and acts also as a good astringent, while the iodine preparation possesses the power of changing the pus-producing surface to a plasma-producing surface. It stimulates debilitated parts to a healthy action, but destroys such as are too weak to respond to its action. No fungus growth can long resist its continued application, while the coating of the tanin preparation protects the new growth from external injury. Previous to each application, it is necessary to remove the leathery coating, which can be done with plieos, or wiped off with bibulous paper.

This treatment I repeated every day for about 45 days, when I found new tissue had restored lost parts. During this length of time, I did not permit him to use a brush but once a day, and only after the last meal previous to another application. The brush, I was careful to see, was very soft, and I directed him to brush up and down, instead of across. I then discontinued the topical treatment, and prepared for him a mouth-wash composed of chlorate of potash, glycerine, tannin and rose-water, and directed him to rinse his mouth three or four times daily with it, diluted a little, giving his gums a good bath in it. The case I consider well entirely. There is not the slightest fœtor, and his mouth seems to be as pure and healthy as a babe's.

The length of time required to treat, and restore lost tissue, where destroyed by the ravages of this disease, will vary

according to the condition of the case, and the amount of lost tissue to be restored—say from ten to one hundred days. It should be kept daily till the new tissue is sufficiently formed and developed to resist irritating agents.

The iodine, as well as the tannin preparatins, should be prepared as long as possible previous to using, as they improve by age. The bottles containing the preparations should be wide-mouthed, and have glass stoppers.—*Southern Dental Journal*.

ON THE SIZE OF THE TEETH AS A CHARACTER OF RACE.

By WILLIAM HENRY FLOWER, L.L.D., F.R.S., P.Z.S.

Concluded from page 668.

The average dental indices of the various races measured appear to vary between 40 and 48, although individuals may be found which either fall below or exceed these numbers. The general average may be taken at 43. Following the convenient method of division adopted with other indices, the dental indices may be divided into three series, called respectively :

Microdont	. . . . .	below 42.
Mesodont	. . . . .	between 42 and 44.
Megadont	. . . . .	above 44.

I may begin, for the sake of comparison, with a study of this character in the anthropoid apes, the results of which are shown in the following table. It will be observed that the dental index is, in all cases, greater in the female than in the male, in consequence of the molar teeth of the former sex more nearly retaining their characteristic size, while the general size of the cranium, as indicated by the basio-nasal length is diminished. This is very marked in the gorilla, in which animal the disparity between the sizes of the sexes is very great, while in the chimpanzee, the male and female of which scarcely differ, the dental index is also almost alike.

A similar relation of the dental index of the two sexes in the human species is also seen, especially in those races where the disparity of size between the men and women is greatest.

	BN.	d.	INDEX.	AVERAGE INDEX OF BOTH SEXES
Male gorilla, average of 3.....	124.0	63.0	50.8	} 54.1
Female gorilla, average of 3.....	108.7	63.3	57.3	
Male chimpanzee, average of 3.....	96.7	46.0	47.6	} 47.9
Female chimpanzee, average of 3.....	88.3	42.7	48.1	
Male orang, average of 4.....	109.2	58.0	53.1	} 55.2
Female orang, average of 2.....	90.0	51.5	57.2	
Male siamang, 1.....	79.0	33.0	41.7	

The first three species are therefore strongly Megadont while in the siamang the molar teeth are scarcely larger in proportion to the skull than in the higher races of men.

In twenty male British skulls, of which the teeth are sufficiently perfect to allow of measurement, the average BN is exactly 100 millimetres, and the average dental length is 41 millimetres giving an index of 41: the maximum dental length being 45, the minimum 35; the maximum index 45.2, and the minimum 35.8.

In thirteen female British skulls the average BN length is 95, the average dental length 39.5, giving an average index of 41.6. The maximum length is 43, the minimum 35. The maximum index is 44.9, the minimum 36. The remaining results of the measurements, which it may be hoped will be extended and corrected by other observers having still more ample material at command, are as follows. It will be observed that the three groups into which the races may be separated by the size of their teeth, have a general correspondence with the three principal modifications of the human species; the Microdont section, containing all the so-called Caucasian or white races: the Mesodont, the Mongolian, or yellow races; and the Megadont section, being composed exclusively of the black races, including the Australians.

	Sex.	Number of obser- vations.	Average BN,	Average d.	Average Index.	Average In- dex of both Sexes.
<i>Microdont Races.</i>						
British	Male.	20	100.0	41.0	41.0	} 41.3
"	Female.	13	95.0	39.5	41.6	
Mixed Europeans (not Britsh.)	Male.	52	101.3	41.0	40.5	} 41.1
"	Female.	14	95.1	32.6	41.6	
Ancient Egyptians	Male.	7	101.4	41.4	40.8	} 41.0
"	Female	8	95.9	39.5	41.2	
Polynesians (mostly Sand- wich Islanders) ¹	Male.	22	105.3	42.2	40.1	

¹ The teeth are actually larger than in Europeans, but the index is reduced by the great length of the *basis cranii*.

	Sex,	Number. of obser- vations.	Average BN.	Average d.	Average index.	Average In- dex of both sexes.
Low caste natives of Central and Southern India (most- ly males).....		42	99.5	41.2	41.4	
<i>Mesodont Races.</i>						
Chinese	Male.	12	98.8	42.1	42.6	
American Ind. of all parts...	"	51	99.2	42.5	42.8	
Malays of Java, Sumtra, etc. "	"	70	99.7	43.2	43.3	
Afric. Negroes of all parts ² "	"	44	103.0	44.5	43.2	
" " "	Female.	26	97.9	43.6	44.6	} 43.9
<i>Megadont Races.</i>						
Melanesians (of various islds.)	Male.	21	102.3	45.2	44.2	
Andanamese ³	"	9	94.4	41.9	44.4	
"	Female	8	88.8	41.2	46.5	} 45.5
Australians.....	Male	22	102.5	45.9	44.8	
"	Female	14	95.5	44.0	46.1	} 45.5
Tasmanians—.....	Male.	9	100.0	47.5	47.5	
"	Female.	4	95.5	46.5	48.7	} 48.1

Discussion.—Mr. Hyde Clarke ventured to express a wish that Professor Flower had given the maximum and minimum in each case, as he had simply quoted the averages. An average, he would remark, was not a scientific fact, but rather an amusement of statisticians. In natural science it amounted to the suppression of individuality, and thereby of the real elements of description, definition, and classification. The method of their President was a tentative one, but he had great hope that it would afford a convenient medium for the ready determinations of characteristics, as, indeed, the teeth themselves had done in Zoology, and thereby give to anthropological determinations a definiteness which they had not hitherto obtained. He believed that the very determination of the distinctions and differentiation between male and female dentition might prove ultimately a criterion for determining the influence of mixture on races.

Dr. Walter Coffin begged the privilege of thanking the president, on behalf of the dental profession, for a very suggestive paper on a matter of great interest to them. The measurement which Professor Flower would doubtless find it convenient to call the "mesio-distal molar length" was an important one, and conveniently made upon the living subject, though unfortunately the other factor of the professor's "dental index" must be otherwise inferred during life. Per-

² In these again the index is reduced by the great length of the *basis cranii*.

³ It is the relative, but not the actual, size of the teeth which brings these small people into the Megadont series, among the races to which in many other respects they are allied.

haps the most interesting point brought out by the statistics was that the European races were really within one group—the Microdont; this fact bearing upon the theories as to the pathological conditions presented in dental crowding and certain forms of irregularities. It was highly important to know something of the distribution of variations within the range of the groups averaged, and especially of the frequency of *exceptional* ones at the limits.

Mr. Lewis inquired whether the teeth in all races were of the same proportions, or nearly so, as it seemed that the observations of the President were based solely on the space occupied by the three molars in line. He congratulated the President on having taken up a line of investigation which was apparently not only new, but likely to lead to important results.—*The Journal of the Anthropological Institute of Great Britain and Ireland.*

Dental News

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

ORDINARY MONTHLY MEETING, June 1st, 1885.

C. Spence Bate, F.R.S., President, in the Chair.

The Minutes of the previous meeting having been read and confirmed.

Messrs. Herbert, Parkinson, Alexander Kirby, and Edward Latchmore signed the Obligation Book, and were formally admitted to Membership by the President.

Mr. Charles Alfred Roberts, L.D.S., Eng., 44, Devonshire Street, Portland Place, was balloted for and elected a resident Member.

Mr. Oakley Coles announced, in the absence of Mr. Weiss, that the following donations had been made to the library:—

“Das Füllen der Zähne mit Gold, &c.,” von Wilhelm Herbst.

“Praktische Darstellung der Zahnärztzkunde,” von Phillipp Detzner.

“Proceedings of the Royal Dublin Society.”

“Transactions of the Royal Dublin Society.”

Mr. S. J. Hutchinson announced that he had received the following donations for the Museum;—

From Mr. Walter Coffin, models of the mouths of members of the Kostroma family.

From Mr. Oakley Coles, a remarkable specimen of calcification of the pulp or "pulp-stone."

And from Mr. Redman, of Brighton, a number of interesting specimens, including a bicuspid which appeared to have been split by the pressure of gas in the pulp cavity; two lower first molars, showing absorption of the root and exposure of the pulp, caused by the pressure of the second bicuspid; a wisdom tooth with four roots; several lower second molars with three roots; a molar with a curious nodule of enamel attached to the side of the crown; a bicuspid with dilacerated root, and a wisdom tooth with a remarkably curved root, both of which must have been very difficult to extract.

Mr. Redman said that, with reference to the lower molars with absorbed roots, it might be interesting to state that the patient to whom they had belonged, a young lady, aged fourteen, had, at the time she came to him, been under treatment for two years suffering from reflex spinal irritation, which was said by her medical attendant to be hysterical. Mr. Redman found the bicuspids low down, and wedged between the neighbouring teeth; he extracted the first molars, and found them in the condition now shown. The patient called upon him some time afterwards to thank him for what he had done, saying that she had lost from that time the pain in her back and weakness, and had got quite well.

The case of the split bicuspid was also interesting. The patient suffered agonies of pain for two days, when it suddenly ceased and she found that the tooth was "loose." When she came to Mr. Redman the tooth was split vertically down the middle; it was perfectly sound and *it had no antagonist.*

The President said that, by a curious coincidence, he had brought with him the model of a case somewhat similar to that just related by Mr. Redman. The patient had been suffering for some days severe pain, which she attributed to a second right upper molar, which she thought was decayed and into the cavity of which she had forced as much cotton-wool as she could. When she presented herself, the tooth

was still painful, but, instead of being decayed, it was found to be vertically split from crown to base. The tooth had been superficially filled some thirty years before by the late Mr. Sheffield, of Exeter, with tinfoil faced with gold, and the filling, except that the fracture traversed its wall, was in a well-condensed and perfect condition. The cotton wool which had been forced into the cleft, and which kept the fragments apart, was removed, the cavity was cleansed, a dressing of carbolic acid and glycerine inserted, and an elastic band placed round the tooth. Next day the tooth was easier and the same treatment was repeated. On the third day the dressing was again changed, and instead of the elastic band some gold wire was placed round the tooth and screwed up until the two fragments were brought into close contact. After three or four days the gold was removed, the rubber dam applied with a clamp, the old stopping drilled out, and the cavity thoroughly cleansed and prepared to receive a filling. The surface of the cavity was then washed with a brush dipped in a thin solution of gutta-percha in chloroform, and the two sides of the tooth again brought together by a band, formed of several coils of soft platinum wire. The cavity was then filled with eclectic amalgam, rotated in with smooth points. The rubber dam was then removed, but the platinum wire retained. The tooth had remained comfortable up to the present time, and appeared likely to be a permanently useful tooth.

The President also showed a case in which the second and third upper molars were united into a single tooth, and also a permanent incisor which had been split longitudinally previous to eruption, and the interspace filled up with new dentinal tissue.

Mr. S. J. Hutchinson said he had met with three cases of split teeth during the last two years. In these cases he had bound the teeth round with iron binding wire, and they had remained quiet and useful. The wire turned black, but it did no harm to the teeth; it was very tough but soft, and easily applied. In future, however, he should try platinum wire as the President had suggested, for he found that the iron wire needed renewing at the end of six months.

Mr. A. Wilson (Edinburgh) presented to the Society's Museum a skull of the Bandicoot rat (*Mus giganteus*), and in doing so drew attention to the peculiarity of the socket of the lower incisor terminating as a strongly marked process directed upwards and backwards from the base of the condyloid process, that in the common rat ending as a mere tubercle at the base of the coronoid. He exhibited a human lateral incisor which simulated in a very remarkable degree the third incisor (second lateral) of the horse. Also the upper central incisor of a *Hypsiprymnus* (Kangaroo rat) showing the enamel terminating by a well-marked curved margin beyond which the tooth (root ?), was decidedly smaller. He thought it went a long way to prove that the statement usually given as to this tooth being one of persistent growth was erroneous.

Mr. Oakley Coles said, with reference to the model of the Kostroma boy, which had been presented by Mr. Coffin, that about five years ago Mr. Charles Tomes and himself had carefully examined and taken models of the mouths of both this boy and his father. The upper jaw of the father was edentulous, and he had, so far as he (the speaker) could recollect, only two teeth in the lower jaw. The boy, then said to be ten years of age, had also an edentulous upper jaw and only one incisor in the lower. Since then a considerable change had taken place, for he had now three incisors in the lower jaw, two of which, however, had broken away, two canines in the upper jaw, and he (Mr. Coles) thought he could distinguish signs of the approaching eruption of an upper molar. A remarkable peculiarity about the models which were taken by Mr. Charles Tomes and himself, which he believed were somewhere in the Museum, was that the jaws of the father and of the boy were almost identical in size. Since then those of the boy had undergone a considerable amount of development, and there was also an increase in the number of teeth, facts which seemed rather to confirm the opinion held by many authorities that the size of the jaws depended to a considerable extent on the eruption of the teeth.

THE EDINBURGH DENTAL HOSPITAL AND SCHOOL.

The half-yearly meeting of the directors of this institution was held on Tuesday, the 21st July, in the school in Chambers Street. under the chairmanship of Dr. Smith. The Dean, Mr. Bowman Macleod, in submitting the report of the school work for 1884-85, said he had much satisfaction in being able to announce the continued prosperity of the institution. The average attendance had been most satisfactory, and the quantity and quality of the practical work had been exceptionally good. The report mentioned the gratifying position which the students had occupied in the medical classes in the winter session, Mr. J. Leslie Fraser having taken first place and a silver medal in the class of *materia medica*. In the special work of the hospital practice the senior prize had been gained by Mr. Thomas P. Ritchie, Mr. David Brown receiving a special commendation. In the junior division Mr. Gordon Shiach took first prize, Mr. E. P. Rose being a good second. In the class of dental anatomy, the prize had been gained by Mr. J. Leslie Fraser, while Mr. David Brown had carried off the prize in the class of dental surgery and dental mechanics. The number of cases treated at the hospital for the quarter ended 30th June were as follows:—Extractions 706 males and 483 females for minor operations, in addition to 24 major operations under anæsthetics, and 499 stopping cases—476 in gold, 174 in alloy, and 149 with cement. The total for the quarter was thus 1702, being an increase of about 100. On the motion of Dr. Reid, the report was adopted, and the Chairman then presented the prizes to the successful students, and commented on the gratifying results of the work, mentioning that 1055 stoppings had been inserted by the students competing for the "Hospital Practice" prizes during the term of $7\frac{1}{2}$ months. On the motion of the Dean, a vote of thanks was accorded to Mr. J. Leslie Fraser for the attention he had paid to the work of the school during the last three months, and a similar compliment was paid to the Chairman on the motion of Mr. G. Graham.

PASS LIST OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

On the 24th ult., the following gentlemen were admitted
Licentiates in Dental Surgery, viz. :

Messrs. Paul Charles Albert Bardet, Geneva.

George Goring Campion, Manchester.

Walter Joseph England, Hampstead.

Frank Hampton Goffe, Birmingham.

Alexander John Jones, Maida Vale.

George Henry Mugford, Exeter.

Frederick Snell Peall, Brixton Rise.

Arthur Bernard Robinson, Liverpool.

Charles Robert Smith, Leamington.

Hugh Lloyd Williams, Llanberis.

William Maurice Gabriel (M.R.C.S., 1884), Gloucester
Gardens.

Alfred Sextus Mackrell (M.R.C.S., 1884), Queen Anne
Street.

Four candidates were referred to their studies.

ROYAL COLLEGE OF SURGEONS.

During the July examinations the following gentlemen passed the First Professional Examination for the Licence in Dental Surgery :—Gordon Reid Shiah, Elgin ; Arthur Cocker, Halifax ; and Frank Gordon Allen, Ripley, Derbyshire ; and the following gentleman passed the Final Examination, and were admitted L.D.S., Edinburgh :—Thomas Prettie Ritchie, Edinburgh, David Browne, Montrose ; and Andrew Burns, London.

APPOINTMENTS.

Mr. Chas. Sims, L.D.S., Eng., has been appointed Lecturer on Dental Surgery, at Queen's College, Birmingham.

Mr. W. T. Elliott, L.D.S., Edin., has been appointed Lecturer on Dental Mechanics in the Dental Department of Queen's College, Birmingham.

Mr. Storer Bennett, F.R.C.S., and L.D.S., Eng., L.R.C.P. Lond., has been appointed Dental Surgeon to the Dental Hospital of London, vice Mr. S. J. Hutchinson, resigned.

Mr. William Hern, M.R.C.S. and L.D.S. Eng., has been appointed Assistant Dental Surgeon to the Dental Hospital of London.

Mr. Charles Clark, D.D.S., has been appointed Dental Surgeon to the Home and Infirmary for Sick Children, Sydenham.

VACANCY.

The part of Tutorial Dental Surgeon at the Edinburgh Dental Hospital and School will shortly be vacant. Salary £30. Applications received till 1st October. Address, the Dean, 30, Chandos Street, Edinburgh.

CORRIGENDA.

Mr. W. S. Burrows writes to say the initials M. S. should be W. S. In the eighth line the word *pin* should read *piece*.

MONTHLY REPORT OF CASES TREATED AT THE DENTAL HOSPITAL OF LONDON.

From JUNE 1st to JUNE 30th, 1885.

Extractions	{ Children under 14	411
" "	{ Adults	921
" "	{ Under Nitrous Oxide	545
Gold Fillings	. . . . .	365
Other Stoppings	. . . . .	822
Irregularities of the Teeth	. . . . .	140
Miscellaneous Cases	. . . . .	105
Advice	. . . . .	323
		<hr/> 3632

ARTHUR KING, House Surgeon.

QUARTERLY REPORT OF CASES TREATED AT THE DENTAL HOSPITAL OF EXETER.

From April 1st to June 30th, 1885.

Extractions.	{ Children under 14	270
	{ Adults	575
	{ Under Nitrous Oxide	26
Stoppings.	{ With Gold	3
	{ " White Foil	8
	{ " Plastic Material	124
Miscellaneous.	{ Irregularities of the Teeth, Scaling, &c.	104
		<hr/> 1114

HENRY B. MASON, Hon. Sec.

British Journal of Dental Science.

No. 422. LONDON, AUGUST 15, 1885. VOL. XXVIII.

EXPOSED DENTAL PULPS AND THEIR TREATMENT.*

By Dr. S. F. DUNCAN, Wilmington, Ill.

I have selected for my subject, "Exposed Pulps and their Treatment," not because I have anything new to present, or with the idea that I could say anything that would be instructive to such an intelligent body as is here convened; but it has been some time since we have had a paper on this subject, and so I decided to write a short one for you to use as a target at which to hurl your missiles of mature knowledge, from which I and other of the younger members may learn something of practical value on this important branch of dental pathology and therapeutics.

In the treatment of exposed pulps much depends on the health of the patient: his constitutional peculiarities, habits, and idiosyncrasies; the condition of the mouth, teeth, and adjacent parts; and the date of exposure, whether recent or remote. Pulps usually become exposed from one of the following causes: by accidents in excavating, if not lacerated so as to cause hæmorrhage, it may be capped immediately, and the operation of filling the cavity be proceeded with as soon as the capping has become sufficiently solidified to withstand the pressure of the plugger. But if we have bleeding, it will be necessary to control this before the capping process is begun, which may be done by applying some one of the milder styptic agents. In this class of cases the prognosis is usually favourable, if the capping has been skilfully performed and the constitutional health is good.

We many times find caries penetrating to the pulp cavity without the pulp ever having given trouble, and without its

A Paper read before the Illinois State Dental Society, and reported from the Transactions of the Society.

having suffered any mechanical injury. In cases of this kind the careful operator will usually anticipate the condition and use great care in the removal, with the excavator, of the superficial layers of decayed dentine; removing first that portion around the margins of the cavity and not disturbing the layer of decomposed or semi-decomposed structure immediately overlying the pulp. This protecting layer should now be treated to an application of carbolic acid or other antiseptic, sufficiently powerful to destroy the germs and ferments, thereby preventing further decomposition. This capping or protection should now be covered with the oxy-phosphate of zinc, else decay *may* go on under the filling of metal; the cement also acts as an insulator to protect the pulp from thermal changes, thereby preventing pain, congestion, inflammation, and their sequelæ. This I regard as *the best* method of protecting pulps, when it is possible to do it, as the pulp takes much more kindly to a covering so nearly approaching nature's own protection than anything that art can substitute.

Pulps are encroached upon by caries in many instances, and even become slightly congested, without causing more trouble than just a slight uneasiness or an occasional sharp twinge of pain, which is usually caused by sudden changes of temperature, or the influence of chemical irritants, such as saccharine, saline, or acid matters in the food. Little treatment is necessary in this class of cases, aside from the removal of all local irritants and proper protection against thermal changes.

We now come to the condition known as pulpitis, or inflammation of the dental pulp, which is *usually* caused by caries penetrating to the pulp chamber, thus permitting irritants, either chemical or mechanical, to come in contact with the pulp. Pulpitis may be of either the acute or chronic form.

Mr. Tomes says that ninety-nine cases in a hundred of inflammation of the dental pulp are caused in this manner. The sensitive nerves of the pulp thus being exposed to external influences cause an increased flow of blood into the part, and in proportion as we have an increased flow of blood

into the pulp, just in that proportion will we have diminished flow out of it ; since, if the arteries are distended, the veins will necessarily be compressed or strangulated at the apical foramen. Of course the swelling is very limited, because of the confinement of the pulp within the rigid dentinal walls—thus the pressure becomes proportionately great, and also the pain, until complete strangulation occurs, resulting in disorganization of the pulp.

The more powerful the irritant, the sooner will this stage be reached. Inflammation is not always present in this active form, hence we frequently have patients tell us that they have had an uneasiness or sharp twinges of pain for quite a while previous to presenting themselves for treatment.

Usually, when the stage of suppuration is reached and the orifice of exposure is free so as to permit the discharge of pus, the pain will subside as soon as the pus is evacuated, and only recurs from time to time, when excited by irritants or the reaccumulation of pus.

In the conservative treatment of this class of cases much depends upon the systemic condition of the patient, the condition of the pulp, the date of exposure, the size of the orifice of exposure, and the character of the irritant. If the pain is caused merely by irritating substances coming in contact with the pulp, little treatment is required further than the removal of all irritants, both chemical and mechanical, and properly protecting the organ from their further encroachment. But if this is not sufficient to relieve the pain, therapeutic means must be used, which should consist of the local application of such remedies as are best calculated to relieve the pain and reduce the inflammation.

Systemic treatment may also be resorted to with benefit, if the inflammation is severe.

If the patient is of full habit, a saline cathartic may be useful, or the tincture of aconite may be administered with good effect. If the pain appears periodically or is due to malarial influence, I know of no better remedy than the sulphate of quinine. This constitutional treatment also applies to pulps that are painful after capping.

It has been the practice of some operators to deplete the pulp by puncturing it with a sharp pointed instrument, or by excising a small portion of it at the point of exposure, and encourage bleeding by the application of warm water, thus relieving the pressure on the nerves of the pulp and consequently the pain. But my experience with punctured or lacerated pulps has, as a rule, been anything but gratifying, either to myself or my patients; for while it may relieve the engorgement of the pulp-vessels at the time, and thereby give temporary relief from pain, yet I believe the statement made by our friend Dr. Stevens, at our meeting two years ago to the effect that "few pulps that have been exposed so as to cause bleeding ultimately survive," was more nearly correct than some of us supposed.

I do not say that *all* pulps that have been thus exposed will die, but, as a rule, they will not become permanently healthy and useful organs. I think we are many times deceived by appearances, for after we have depleted the pulp, adjusted the capping, filled the cavity of decay, and have everything in a condition, as we suppose, "warranted to keep in any climate," what is our chagrin when in a few months the patient returns (or more likely goes to some other dentist) with his face swollen, saying that the tooth is a half inch longer than any other, and that it is so painful he has not been able to sleep an entire night for more than a week. He wants the tooth out and the operation completed without delay. We may explain to him that, with a reasonable degree of patience and proper treatment, the tooth may yet be made comfortable and useful, but we will probably find that just at that particular moment he is not in the least in sympathy with our ideas of chloroform and gutta-percha, and root fillings in general. And even if we *should* persuade him to submit to treatment, the question will naturally force itself upon us: Would it not have been better practice to have devitalized the pulp in the first place, filled the roots, preserved a better colour in the tooth than we now have, retained the patient's confidence, and saved him an immense amount of pain and inconvenience?

Of course all pulps that have bled do not cause trouble of this kind, for many die under fillings without ever giving more pain than just a slight uneasiness caused by a low degree of inflammation in the pericementum, induced by gas from the putrescent pulp escaping through the apical foramen of the root.

In other cases the pulp may die under fillings without causing any pain whatever, but even then we have greater discolouration than would have resulted had the pulp been devitalized in the first place and the root properly filled; and moreover, this discolouration is of no little importance if it occurs in a front tooth or a bicuspid.

When the inflammation has reached the suppurative stage, it has been the practice of some operators to extirpate the diseased portion of the pulp and then cap the remainder, after having brought it to as nearly a state of health as possible. This kind of treatment *may* be successful in a certain class of cases when done under favourable conditions, but we should certainly use great discrimination in selecting a subject for this operation. On the whole I regard it as rather questionable practice.

Another method of treatment is by digesting away the diseased surface, leaving the clean, healthy portion for capping. Pepsin is the agent usually employed for this purpose, and is used in combination with hydrochloric acid. After the cavity is well cleaned and dried the remedy is placed on the exposed surface, and over the pepsin a pellet of cotton or bibulous paper. The cavity of decay should now be filled temporarily in such a way as not to cause pressure on the pulp. This may be done with wax, or what is better, a soft preparation of gutta-percha. It should remain in the cavity under ordinary circumstances, for about twenty-four hours, at the end of which time the pulp should present a clean, healthy appearance, and may be capped and the filling introduced in the usual manner.

A decoction of the leaves of the pawpaw has also been used, to some extent lately, for digesting devitalized tissue, not only in diseased tooth pulps, but in obstinate ulcers and

sores on other parts of the body ; but being a new remedy it has not, as yet, come into general use for either purpose.

I believe Dr. Van Antwerp was the first to call attention of the profession to this remedy.

I have had no experience in this method of treatment, but am inclined to doubt its efficacy for the permanent conservation of the remaining or healthy portion of an exposed and diseased pulp. A third method of treating such cases is by change of climate, *i. e.*, by devitalization ; and though it may be regarded by some as heroic treatment, it is, in my opinion, the safest, surest, and most satisfactory way, in the majority of cases, of treating pulps that have been inflamed to any considerable degree, or where they have been seriously wounded.

To be continued.

ORAL SURGERY.*

By DR. HAMILTON, Columbus, Ohio.

Gentlemen,—I supposed I was to meet a couple of dozen dentists and to take up a topic common to your profession and mine. I received your invitation last night, and accepted it, and although I have not passed a thought upon this branch of surgery in which I have had much experience, I will probably be able to sufficiently occupy the time allotted.

I call your attention to the surgery of the jaws—not the teeth, and it will be impossible to more than touch upon the subject. It is only a short time since surgery invaded the jaws to any considerable extent. Minor operations had been performed, but it was only a couple of generations back that these bones were operated upon extensively. The time has come when everything between that which you do, and a complete extirpation of the entire bone is effected. I show you, as exemplifying the remark, this specimen, It is an inferior maxillary bone. Both of the condyloid processes are there, and the entire bone between, and with it a tumour that weighs two pounds and a half. It was removed from a gentleman in West Virginia, successfully as far as the removal was concerned, unsuccessfully in that my patient died.

* Portion of a paper read before the Ohio State Dental Society.

We have here a skull in pieces. You are familiar with what constitutes the superior maxilla, but it will not be out of place to inquire what constitutes its removal. I have here the antrum laid open and shown very nicely. The division is a little to the left of the median line. This section is where we make it in removing the superior maxilla. The incision, when the part is in a normal condition, is not the extensive thing you would encounter when you come to look at a specimen like this. This exemplifies a case that requires the removal of the superior maxillary bone, and might be a mild case. It is not as large as some. I have another preparation that shows an exaggerated case. It is another immense tumour that weighs two pounds. It rises as high as the nose, closes an eye, fills the mouth, and projects the right side of the face very extensively. In one case I had even an exaggeration of this in many respects. It protruded from the mouth more and lifted up the eye until it rested against the superior orbital ridge. Looking at this preparation the removal of such a growth would seem a very formidable thing, and it is. We removed the superior maxilla two or three weeks ago. I announced to my class that it was a most promising case of the kind. Although it was not a grave case in some of its aspects it proved to be very bloody. A dozen arteries were spurting their contents at the same time. After we removed the tumour we found it necessary to tie but one artery. Although the hæmorrhage seemed formidable it proved a very feasible procedure, the wound healing in a very few days. In such a case how are we to work? How are we to distinguish a case in which we *can* operate, one in which it will *pay* to operate, from one in which it will not? Before I performed this operation I saw a tumour very much worse than this, in which case I decided that an operation would not pay. I declined to operate, and soon after I operated on another case in which the tumour seemed quite formidable. In four months it had attained these proportions. The ability to remove it was not questioned, but it had developed within a period of six months to a large growth, involving all the surrounding parts. The fact that it came within that time put it among malignant

growths, and I would do harm rather than good by attempting its removal. In the case in which I operated my patient had had a growth of seventeen or eighteen years ; finally, coming to occupy the mouth, press up the floor of the orbit, and be a large tumour, though not near as large as some I have removed. The question of malignancy is of prime importance. In these rapid cases by no means operate. A malignant growth of very rapid development will be fatal if it attains this growth, developing in connection with the superior maxillary bone, destroying other bones about it, all within six months. The removal would amount to nothing. It might do something for the reputation of the surgeon, but no good to the patient. A growth that begins within the antrum, and growing slowly, presses its walls apart, and finally, perhaps, crushes absorption of them—once removed will not return again, and is attended with the very best results.

I have here a growth of that kind in a quart cup. When put in it filled it. Full strength alcohol has been on twenty years, and it has contracted, but it is an immense growth to develop from the antrum. The case has a remarkable history. It occurred in Muskingum township, Muskingum county. The tumour got to be of immense size, projecting from the boy's mouth, forcing the eye from the orbit to considerable extent, and filling so much of the mouth that the only way of eating was to get his food between his teeth and cheek on the left side, and back to where the posterior molars were absent and so into the posterior part of the mouth. The back part of the mouth was also occupied by this growth. A boy of fourteen years having such a tumor would be a monster in appearance. He consulted the leading surgeons in this country and a number in Europe.

That tumour is immense ; it is striking in some of its aspects that relate more particularly to its anatomy. That was generally decided to be a post-maxillary tumor. It was believed to have developed behind the antrum, and pressing outward through the pterygo-maxillary fissure into the temporal fossa, and at the same time involving the superior maxillary bone, became very prominent in front. The surgeons advised that it be let alone. Leading surgeons in this coun-

try and Europe advised that course, believing its removal not practicable. Many operations of that kind had been performed but without exception the patients died. The case finally came back to Zanesville to die. It came under the care of Dr. Hildreth. The Doctor referred the case to me. I made an examination. I asked him to stay and let me decide what to do. I made frequent examinations, and concluded it had developed in the antrum ; that it was not a post-maxillary ; that in developing it had caused absorption of the posterior as well as the anterior wall, and had developed very largely backward and outward. That made a difference as to the possibility of removing it; I came to the conclusion to remove it. I spent six weeks on that case, and the boy visited me every day or two. I believed almost from the first that it could be removed, but so many eminent men had passed on it unfavourably that a young man thirty-three years of age would be slow to take on himself so formidable a procedure. During this six weeks I made arrangements to remove it. The "Sons of Malta" agreed to use some funds for defraying the expenses of the operation. I arranged to do it at my regular clinic, in a room holding seven hundred persons, and that room was packed. It was under those circumstances I had to operate. Prof. Blackman, of Cincinnati, had examined it, and decided it could not be removed. In two weeks the patient went home. He is alive to-day and well.

TO ALL WHOM IT MAY CONCERN.

By ARTHUR HARE, D.D.S.

The proverb, that "what is worth doing at all is worth doing well," is specially applicable to the dental surgeon who contemplates "setting up on his own account" for the first time.

Time was, when a glib tongue, inexhaustible assurance, and a couple of keys was all the capital that many a successful practitioner had to fall back on in his embryo days. Now, however, things are different. Not that these acquisitions are useless—by no means. It would be difficult perhaps to succeed without them. But as all first-class dentists now

provide themselves with abundant paraphernalia, it behoves us as professional men to keep pace with the times. We should at least scan the journals and look up the new improvements and inventions in our calling, so as to be conversant with these introductions should they at any time happen to be the subject of discussion between us and our fellow practitioners or patients. The public is not yet awake, nevertheless it will expect us to exhibit some of these contrivances in our surgery, whether we use them or not.

Some dentists will tell you that any instrument will do for dental purposes, especially in the workroom. This is a mistake. There are innumerable appliances on sale at the various depôts. It is well to have some of the most conspicuous, and to display them in the surgery to the best advantage.

We should all of course be provided with a saliva-ejector an electro-magnetic mallet and a Wilkerson chair. With clamps, clamp-forceps, ligatures, and punch, we may pass the time with some of our patients, and in addition to these *essentials*, half a dozen pairs of extracting forceps, together with a few elevators will sometimes come in useful, for though conservative dentistry is all the rage at present, yet there are some unenlightened individuals who prefer to see their tooth in the dental spittoon than to have a gold filling on the nerve. In such a case (filling on nerve) recourse should be had to extraction, provided five shillings can be had for it there and then. It will help to keep house or to pay for the washing, besides which it will *relieve* the patient.

If they refuse to pay beforehand refer them to the assistant. He will break it for them in the morning between nine and ten.

At the same time let us remember that it is better policy never to resort to extraction except in extreme cases. We should follow conservative teaching here, and, without expending all our energy and occupying our valuable time in the removal of decay, should fill the tooth with a Westons.

Should the patient return after a few days and complain of sleepless nights and unbearable pain, we should endeavour to stay his anxiety in assuring him that the cause is *neuralgia*,

and that the pain will "pass off." We may then administer the usual antiphlogistic remedies, apply nerve paste and fill right away. In the event of the patient suffering further inconvenience, the offending tooth should be removed and a bill made out, for *professional* services, the fee being regulated by the *judgment* of the operator.

If the practitioner can manage this style of business, he should establish a branch concern and run it on the same principle in a neighbouring town, setting an assistant to work it in his own (the employer's) name.

If anything serious occurs and he perceives his clientele diminishing, and his prestige really on the wane, he should remove to some other locality where a *good man* is needed, he will have done what he could and may do better if he "moves on."

A gold filling should always be recommended. It will last the longest. Of course we are impartial in our advice on this point—quite disinterested. Gold is gold at any price, but the patient should be informed that it is for *their* good and that our remuneration consists *chiefly* in having done our duty.

If they will not have gold in the mouth, well, no matter, we have at all events not missed an opportunity of *rendering them a service*. Let us then use Standard Amalgam and look out for other cavities. We should see whether *our patient* would not be benefited by wearing a few teeth nicely inserted on a gold base, or perhaps the use of a regulation plate *with gold wires* would prove beneficial. If there is no occasion for either of these *health preservers*, then the teeth should be sealed, there is sure to be tartar somewhere.

When this is done another bill should be sent in. If the amount only reaches (including filling) two or three guineas, we must be content; of course it will *never compensate* us for the loss of nerve force and the expenditure of time, skill, and material; but we must not be selfish. Others there are in this world who cannot hope to be so well off as we may be if we but play our cards adroitly. In no case should we grumble. We must be polite or we might lose altogether

the family and their influence. Then what would become of their teeth? which it is our *duty* to save!

As scientific members of a *self-sacrificing* body we can surely alleviate pain to some extent. We can resect a pulp, decapitate it, amputate it, devitalize, eradicate or obtund it, we can pepper-bag the gum, or if the pain be very great can dam the tooth, and stop it. We have our choice. The old plan was to take out the tooth.

The new system says, let it remain. Fill the canal, build up a crown, contour it. Never too late to mend.

This latter is decidedly the most approved method, the best for the patient, and, should the tooth be extracted eventually, not too bad for the dentist.

Again, with resources at command such as are offered by a skilful acquaintance with the "possibilities" of the dental engine, none of us need ever lack work in the filling line. For with this ingenious instrument caries of the teeth can not only be removed, but arrested! Prevented!! Anticipated!!!

With a sharp burr or a fissure drill cavities taken in their microscopical incipency may easily be persuaded to accommodate a medium sized plug of real gold, *and there is nothing like gold for the teeth*. It is well that decay should be attended to *before it goes too far*.

Again, should a patient, suffering from rheumatism or chronic bronchitis, seek our assistance, we should not be misled by their location of the lesion or cause of the trouble. Let us be dentists, "There's nothing like leather."

First of all the mouth should be put "in condition," and then, if the symptoms do not subside it will be ample time when we have done all in our power for the patient to refer them to a physician. The teeth, it is well known, are the cause of many pathological and obscure conditions and should be filled, filed, scaled, extracted, replaced or inserted, according to the indications presented—and to the length of our patients' purses.

Above all things we would urge a regular attendance at the Society meetings, &c. It is well to pick up knowledge

where possible, therefore we should repair to the fountain head and imbibe instruction for our future guidance.

Why should such an opportunity be neglected? Let us earnestly learn all we can about the ravages of the "bacteria." How they reproduce their like by scores, how they live, what they live on, and when they die, where they go to.

We know that their orthodox size is $\frac{1}{25000}$ th of an inch in diameter. This is the recognised standard of normality as given us by those who are not above associating with such low forms of life. Knowledge of the habits of these apparently insignificant animalculæ is of vital practical import to the dentist and might assist him in diagnosing an unerupted wisdom tooth or a scirrhus carcinoma of the liver. At these meetings, moreover, useful hints, invaluable in a busy practice, may be picked up; but unless one has something of general interest to communicate, such as the quality of antediluvian tooth-powder or the proper number of serrations for a gold plugger, he had better remain quiescent than talk for the sake of being heard and reported. The time consecrated to the discussion of such important matters should never be trifled with.

It is better to contain oneself than to volunteer observations on irrelevant topics. We do not go there to teach. If we are blessed with a bustling practice, we should have a ledger to record operations. We may thus beguile the time on a wet day and initiate ourselves into the mysteries of abbreviated nomenclature.

That is, provided we get the correct ledger—no dentist should be without one—without this one.

Memory exercised over these symbols will improve—but patience is a *sine qua non*. Details cannot be too accurately recorded. Besides, it is business-like to know whether our patients owe a balance. Let us then sincerely attend to the preservation of the teeth entrusted to our care, at any price, but the higher the better.

Good work demands adequate remuneration, so let us ask for adequate, and see that we get it.

Reflections from the Surgery.

IRREGULARITIES OF THE TEETH—A CASE IN PRACTICE.

By GEORGE W. KEELY, D.D.S., Oxford, Ohio.

The removal of the first molars for the purpose of regulating teeth is a matter of no small importance. No teeth play a more conspicuous part in preserving the *contour of the face*, unless it be the cuspids. I never saw a case where the removal of the cuspids was indicated nor do I ever expect to; neither have I ever seen a case in which I would remove the first molars, if they were all sound, and in a healthy condition. But with one or more badly decayed and broken down, and the patient under 15 years of age, the case is wholly different. Often the removal of a molar from one side will cause the anterior teeth on that side to fall back, and greatly mar the contour of the features. Patients under 12 years of age, with the anterior teeth much crowded, and having defective first molars, where there is a question as to saving them permanently, it is good practice to remove them.

Many of our little patients between the ages of eight and ten have very defective first molars, which should be extracted, even where there is no appearance of irregularity. In not one case in a hundred will the second molars come forward with any indication of tilting.

The following is the case of a girl aged 12 years.

Her mother's teeth were very much crowded, having a high roof and V shaped arch. Three of her first children had the same oral deformity. The other two had well-developed dental arches like their father's.

This Miss was the youngest child. She called to have the first inferior molars extracted. They were badly decayed, and abscessed. As it was a case where the extracting of the four first molars was indicated, I made an application to the aching teeth, and sent her mother a note, telling her what I could do to improve the irregular condition, if she would give

* Reported in *Ohio States Journal of Dental Science*.

me control of her daughter, and that there should be no expense for the operation. My patient's first call was on Monday evening, on her way from school, and she was told to come on the following Saturday to have her teeth extracted, but unlike many who dread such an operation, she called the next morning, and the molars were removed, and her heroism won my respect. It will be seen that the superior cuspids are outside of the arch, and the inferior anterior teeth are much crowded, the four second molars are just making their appearance, but are not in contact.

The first inferior molars were in such a condition that it was a question of doubt as to treating and saving them permanently. The first superior molars were only slightly decayed, and could have been saved, but had this been done, the first bicuspid must have been removed, to let the cuspids down in place, or the superior arch would be thrown out of proportion; and had we saved the inferior molars, it would have been necessary to expand both arches; and it is no easy task to move the pulpless teeth any considerable distance and hope to see them become firm, even after being held in position for years.

In this case, we desired to see what "Dame Nature" would do to regulate all the teeth after the molars were removed.

In a short time we found that the second molars were coming forward so rapidly, that it was necessary to wedge all the bicuspid back, in order to give room for the irregular anterior teeth to fall into line, this was done with compressed pine-wood wedges.

Nothing further was done except fitting a vulcanite plate, bearing hard on the superior bicuspid to expand them about one eighth of an inch to complete a perfect antagonism.

The improvement can be seen two years after the molars were removed, showing both the superior and inferior teeth in line. The spaces made vacant by the removal of the molars was fully $\frac{3}{8}$ -of-an-inch. The second molars and second bicuspid are now in contact and *without any tilting*; and the superior bicuspid in the last model are over $\frac{1}{8}$ of an inch wider apart (measuring from right to left on palatine surface) than the first.

The forward move of the second molars will cause the earlier eruption of the third ; and as they will have ample room, they will be far better developed, and consequently more useful than otherwise. Give the third molars "elbow room" and they will be as good as the others.

My patient's pretty face has been made beautiful. This case paid me better than any one I ever treated, first by the mother's appreciation, and by the young girl's remark to a mutual friend, that she was preparing herself for a teacher, and she hoped some day to be able to remunerate me for my services.

MENTHOL CRYSTALS.—In reply to numerous inquiries regarding *Menthol Crystals*, Dr. Flagg writes in the *Cosmos* that the daily use for a long time of this medicament has established for it great therapeutic value dentally. Dissolved in oily carbolic acid (Merck's Creasote), in proportions of three to five grains to a drachm of acid, it makes one of the most potent pulp-soothers that I have ever used. Made into paste with viscid cosmoline, it is possessed of marked efficacy in quieting peridental irritation in such cases as are somewhat relieved by opening into the tooth ; used by being placed, from small probes, into the pulp cavity and canals, and covered, *not too tightly*, with *dry* pellets of cotton. As an ingredient of "inspissated canal pastes" (for permanent filling of canals), its record is really quite remarkable, as numbers of teeth which have failed to yield to ordinary treatment (acetate of morphia, eucalyptus oil, iodoform paste, etc.) have now remained comfortably "stopped" for varying periods of time ranging from three months to nearly a year. As an adjunct to oil of cloves ointment, and even to aconitia ointment, results have been eminently satisfactory when used externally in cases of so-called "neuralgia," and in swollen conditions concomitant with alveolar abscess. Ointments are made by spatulating a few crystals of menthol into other ointment mass. So acceptable in its working, so harmless in its application, and so persistent in its relief to suffering is menthol, that it has become an "accepted" article in my list of materials, and a welcome aid to the work of the clinic rooms in the college with which I am connected.

British Journal of Dental Science.

LONDON, AUGUST 15, 1885.

DENTISTS AND DIETETICS.

ON another page we draw attention to the Food Receptionf which have been recently held at the Parkes' Museum of Hygiene in Margaret Street, Cavendish Square. The subject of dental hygiene, in so far as it deals with the prevention of dental disease, becomes practicably one of personal hygiene, and the chiefest division of this concerns itself with the provision of substantial and economic food. Professional men, whether dentists or physicians, are constantly assailed with the question, now hackneyed enough, "What shall we eat, what shall we drink?" Whether the question is always answered satisfactorily is open to doubt. Much uncertainty exists in the minds of many, while owing to the fact that dietetics as a science is not taught save as a bye-subject, but few feel themselves competent to lay down *ex cathedra* laws for the guidance of patients. As has been pointed out over and over again in our pages, the dietary of children in civilised countries is nearly always bad. It is based on wholly false ideas, and so presents errors alike of commission and omission. As the leaves of life are fluttered over the children grow up to an estate bankrupt of good teeth. They early learn the horrors of dyspepsia, being unable to digest the materials presented to them as a substitute for rational food. Incapable of masticating solids they contract the habit of sucking their food, and so obtaining by painful exertion, and after an expenditure of much muscular energy, a minimal supply of nutriment. How far the maxillary arches become contracted as a direct consequence of this habit we cannot determine with exactness, but it would appear highly probable that such a state of things certainly tends to bring about such a result. It is a common remark that each generation is worse off as regards its teeth, and that the slightly angular jaw of the mother, admired perhaps for its slight and refined curves, appears in the offspring in a nar-

rowed, ill-shaped maxillary arch, causing early crowding and deformity. Without pretending to say that errors in dietary constitute the sole cause of the teething troubles of infants, we maintain that would the dentists teach their clients common sense in diet, they would obviate much of the suffering now so rife. When the permanent teeth are well formed and not overcrowded, their owners exulting in the lustiness of health defy the warnings of the wise, and ruin their teeth by excesses. Even to these persons we would not solely confine our attention.

It is rather our aim on the present occasion to insist upon the errors which creep into our every-day consumption of food materials. Bread, our so-called staff of life, from the important part it plays or should play in building up the tissues of the body and supplying material for muscular energy and the production of heat, is one of the most unsatisfactory of our nineteenth century articles of food. It seldom contains its full quota of nutriment and it is almost always eaten before it is sufficiently dry. Whole meal bread is voted coarse and so expunged from the menu of polite tables. White bread, a substance almost devoid of merit as a food, replaces this whole meal bread and consequently the teeth suffer. People forget that the body contains a given quantity of organic and mineral stuffs. These are a species of currency fluctuating with the requirements of the body. If this currency be not kept well recruited by food which contains the due quantity of animal and mineral materials, these last are abstracted from the structures forming the actual framework and tissues of the body. Hence the bones and teeth suffer by abstraction of lime salts, while the fat store of the body becomes scantier and scantier until it is exhausted. The time has come when the public should be taught to require from the dentists not merely prosthetic or reparative work but advice and guidance as to how their teeth should be preserved. And again, while it is customary to apply to a doctor for guidance when limbs fail to grow to their full size, or seem day by day to dwindle, how rarely do even intelligent parents appeal to their dentists to know how they can combat the inclination to a narrowed maxillary

arch. If you use your arm you develop its muscles, if you masticate your food you do the like. In spite of such clear common-sense rules it is the rarest thing to find children early and systematically instructed to bite upon hard and resisting foods, crusts, etc. Our grandmothers were wiser in this generation than we are, and made a point of seeing trifles, which we in our arrogance relegate to irresponsible and ignorant hirelings.

STATE INSTRUCTION IN DENTAL MATTERS.—The following has been sanctioned by the Kentucky State Dental Society to give definite information to the people upon a single important point. It is, says the *Dental Register*, printed upon a small card, to be given to every patient who may be, in any respect, interested. A proper distribution of these cards would doubtless serve a good purpose:

“All teeth of children cut after four years of age are second or permanent teeth, and if lost will never be replaced. These teeth frequently begin to decay shortly after they have come through the gum, hence it is important to have them examined at an early age. Parents being generally uninstructed on this subject, the State Dental Association has deemed it proper to give them this advice to save their children much suffering and the loss of valuable teeth.”—

FOOD AND BREAD RECEPTIONS AT THE PARKER MUSEUM.—These have been held since July. Their object is ostensibly to demonstrate by actual analysis and by offering to the gourmand the test of his palate that the foods advocated by the Food Reform League are not only scientifically superior, but are more agreeable than the trash that usually appears upon our tables. The production of nutritious bread is a feature, and the employment of many highly nourishing vegetable products is also advocated. We have so often drawn attention to the vast importance of dietetics as a means of checking and preventing dental disease, that we welcome this opportunity of wishing the practical demonstration of the doctrine we ourselves have over and over again enunciated.

TEETH WITHOUT PLATES.—It is often very desirable, says *The Dental Guide*, to retain the roots of the natural teeth, especially if they are strong and in a healthy condition, or if they can be made so, because there are a good many methods of inserting teeth by engrafting crowns on these roots and making them strong and perfect in every respect, without the annoyance of a moveable plate. The resources of the skilful dentist are so numerous that he is not confined to a rut of experience and is not thwarted in his endeavours by a limitation of methods. Those who have made advancement their watchword have devised ways and means which are only to be made known to be appreciated. This advice then is to all—do not insist on methods which may be inferior, but leave the matter to the riper judgment of your dentist.

PYORRHOEA ALVEOLARIS.—Dr. J. R. Walker, speaking before the Southern Dental Association, says: Different cases require different treatment. When one remedy fails we should try another. He has found the following very efficient, after thorough surgical treatment. Carbolic acid, 3j, ; Tincture Iodine, 3j, ; Glycerine, ʒx. Mix well, and add six parts of Labarraque's solution of chlorinated soda. It becomes colourless and more volatile than water; then add 3j to ij of the crystals of the chloride of zinc, when it coagulates and is strongly astringent. Apply this with the thin end of a toothpick, shaped like a spatula, that will reach into the pockets. In my hands it accomplishes almost what Dr. Robinson claims for his remedy. The dark-blue blood is changed to a lively red; granulations begin at the bottom, and the pockets fill up readily.

A CASE OF PYÆMIA, CONSEQUENT ON AN ABSCESS FORMED AFTER THE IMPACTION OF A SET OF ARTIFICIAL TEETH IN THE PHARYNX, WITH REMARKS ON THE IMPACTION OF FOREIGN BODIES IN THE PHARYNX AND ŒSOPHAGUS, AND ON THEIR PASSAGE THROUGH THE STOMACH AND INTESTINES.—A young woman, twenty-one years old, wearing a vulcanite palate plate with three teeth attached, was awakened in the night of March 22nd, by finding it had slipped from its position, in which

it fitted badly, on account of an antero-posterior fracture in the plate, and lodged in the pharynx. It was easily removed by the gentleman called in, but not without a slight wounding of the pharyngeal wall. An abscess speedily followed beneath the deep fascia, which extended backwards and downwards, involving the articulation of the first rib with the sternum. On the third of April the patient was admitted to St. Bartholomew's, suffering with pyæmia, too ill for a very thorough examination, and died the next day. Dr. Church, in St. Bartholomew's Hospital Reports, mentions a similar case as occurring in Mr. Savory's practice during the month of May, and refers to the frequency with which cases of swallowing artificial teeth are reported, and gives abstracts of cases which have been recorded in the journals. From a study of these he is of the opinion that when it is possible to do so without using too much force, foreign bodies which have lodged should be removed by the mouth; that when they are large and of irregular shape emetics should be avoided; that great care should be exercised in pushing such down into the stomach, and that when it can neither be gotten up nor down, œsophagotomy is safer than delay. Dr. Church concludes with some general remarks upon the passage of foreign bodies through the bowel and the treatment most proper to follow in such cases. Dr. Church thinks that a copious diet of indigestible food with plenty of olive oil is the most appropriate treatment. The oil is given from its tendency to form semi-solid masses in the bowels, and with the idea that such masses may so encrust projecting edges and angles as to facilitate the passage of the foreign body.

HEMIATROPHY OF THE TONGUE IN TABES DORSALIS.—

Among the various affections observed in the course of tabes dorsalis, and sometimes beginning early in the disease, is hemiatrophy of the tongue, a symptom to which but little attention has been paid. This hemiatrophy is stated to be quite frequent, and on account of its rarity in other cerebro-bulbar affections than locomotor ataxia, it has a high diagnostic value, and may materially aid in clearing up a doubtful case. This symptom has several times been ob-

served by Professor Charcot in tabetic cases. Hemiatrophy of the tongue is manifested by a very marked diminution of one side of the tongue ; sometimes the right, at other times the left side being affected. The affected side presents numerous wrinkles and furrows, which gives the affected side a sort of vermicular appearance. Sometimes there is noticed a slight trembling with fibrillar contraction. The tip, in a case under observation, points slightly towards the affected side. This lingual atrophy interferes but very little with speech, and, in the ataxics which Ballet has had under observation, it does not seem to interfere with deglutition or mastication. In most of the cases observed, hemiatrophy of the tongue was associated either with ocular paralysis or with atrophy of certain muscles of the limbs. This last co-existence sufficiently establishes the fact that the pathology of lingual amyotrophic paralysis is the same as that of the muscles of the thenar eminence or of the forearm. What gives a particular interest to this symptom is the fact that it may appear after the first phase of ataxia, and constitutes the only ostensible and clear manifestation of the affection, at a time when other symptoms are only slight or have not even made their appearance ; hence in these cases it becomes a highly important diagnostic symptom, so much so that tabes dorsalis may be safely diagnosed when it is present.

THE BRITISH MEDICAL ASSOCIATION AT CARDIFF.—The annual meeting just over appears to have been a success. With the exception of the section devoted to pharmacology and therapeutics, in which a debate on anæsthesia was held, and of which we hope to give an account, there was not much matter discussed of immediate interest to dentists. Prof. John Marshall delivered a learned address contrasting surgery of to-day with that of forty years ago. Possibly some one among our brother dentists will have the temerity to go in for a like retrospect of dentistry !

THE ASSOCIATION AT CAMBRIDGE.—We have not been favoured with any authentic particulars about the Meeting. The secretaries are, doubtless, far too hard-worked to attend

to such details as supplying contemporaries with "early copy." However, we are informed by those who ought to know "that the meeting will be a great success, and that the number of papers offered is larger than usual." We hope a success will be scored, and no doubt we shall hear of it.

Abstracts of British & Foreign Journals.

THE INDEPENDENT PRACTITIONER.

ATMOSPHERIC PRESSURE IN THE RETENTION OF ENTIRE DENTURES.

By W. B. AMES, D.D.S., Chicago, Ill.

The writer draws attention to the extreme vagueness with which the subject is treated in the current literature. The need of a central chamber was discussed fully as early as 1862. Dr. John Allen claimed that the only office of the central chamber was to prevent the rocking of the plate upon the hard parts in the centre of the palate. Dr. Pease urged the necessity of the cavity over the centre of the palate the amount of pressure derived being proportional to the size of this cavity. Dr. Ambler Tees declares that having swaged two plates for the same mouth, one with a chamber and one without, he found the pressure much stronger in the former. Dr. Tees does not state that he made his plain plate of different size, shape, or relations from his cavity plate. Cases have been cited where mouths satisfactorily fitted with *plain* plates, after failures with plates depending upon the suction of a central cavity had been met with, but Dr. Tees never describes the relations of his plate to the tissues beneath and about. Possibly his result was luck. In these cases Dr. Ames thinks the powerful pressure of the atmosphere is necessary, contact or capillary attraction being insufficient. This pressure he obtains with plates devoid of central cavity or air chamber. His method he thinks is applicable to any case where there is firm tissue over any part of the palate or alveolar ridge.

Dr. Holbrook, whose method of trimming the impression and model to relieve and equalise pressure he esteems most

highly, is described. He trims the impression where the jaw is hard, and the model where the jaw is soft, over such parts as are to be covered by the plate. Thus he pares away the *impression* to correspond with the firm surface at the central region of the palate, and cuts a groove across the *model* anterior to the line of attachment of the soft palate. This groove is described as marking the posterior termination of the plate, is deepest laterally, and shallows directly over the median line. The variable resistance of the tissues anterior to the soft palate is fatal to best results by this method. Sometimes the tissues are sufficiently lax over the posterior portion of the hard palate for this groove to be made of the same depth entirely across, but generally the laxity begins at the margin of the bone, especially at the median line, so that the edge of the plate displaces the soft tissues uniformly, you must extend the plate posteriorly to this margin.

For upper dentures Dr. Ames obtains a good impression of the jaw with any material having the impression extending a little beyond the margin of the hard palate, well up beneath the lip and cheeks and around the maxillary tuberosities. The material for the impression should be of such a consistency as will compress all soft or lax parts, or the model obtained from it should be pared down at these parts. The exact situation of the points where the laxity of the soft tissue of the palate commences, is ascertained and marked out upon the model. Posterior to this line an obtuse groove is made across the model, from the region behind one tuberosity to the other. This terminates at a point where the edge of the plate will be well covered by the buccal tissues, thus leaving no possibility of the entrance of air beneath the plate. The depth of the groove must depend upon the laxity of the parts. It should be of the depth to which the plate is to displace the tissues.

By constructing a plate over this model, allowing it to extend posteriorly into the groove and well up beneath the lip and cheeks, it will not be apt to exert any perceptible influence on the surface of the mouth when there is no force applied to displace it, but immediately upon its displacement from contact with any portion of the surface a vacuum is

produced, from the fact that all edges of the plate were slightly displacing lax tissues that will follow the edge downward, and atmospheric pressure be obtained over all firm parts of the jaw. When removal is desired the force can be broken by raising the lip, thus admitting air beneath the plate.

A plate extending upon or near the soft palate nauseates some patients. In such cases the groove can be formed as far forward as is necessary, and the posterior edge of the plate made to consist of soft rubber, which from its flexibility will give an accommodating contact, to answer the same purpose as the yielding soft parts with the other form of plate.

This principle might be applied to an occasional lower denture, where the ridge is broad and firm, but such cases are rare.

Plates of any material can be made after this method. Continuous gum work, or metallic plates when made with rubber or celluloid attachment, all edges being made thick and rounded to prevent irritation of the soft tissues. It is also consistent to retain healthy roots in the jaw, as they do not interfere, and if situated at the four angles will improve the masticating capacity of the apparatus.

DEUTSHE MONATSSCHRIFT FÜR ZAHNHEILKUNDE.

A CASE OF EXTRAORDINARILY SENSITIVE DENTINE.

C. HARTMANN, Bremen.

On the eleventh of June, of this year, Herr Hartmann was visited by a healthy man of about 45 years old, who had suffered for some days from a most violent toothache. On opening his mouth thirty-two apparently sound teeth were visible, all being of that yellowish colour peculiar to strong and firm teeth. The most thorough examination showed no trace of caries, the teeth, particularly the molars, looked as though polished. When the masticating surface of the first molar of the left side of the lower jaw was pressed on with a pencil, or even with some instrument without pressure being

exercised the man groaned with pain. Against percussion, on the contrary, or any strong pressure the tooth was insensible. The patient did not complain of continual pain but said that when he thoughtlessly touched the tooth with his tongue the pain was unbearable though it lasted only a minute, but on the least disturbance of the masticating surface returned. There was no trace of periostitis. The other teeth were, on the contrary, not sensitive when the tongue touched them. Dr. Hartmann then drilled the painful tooth and the operation was well borne. The pulp was apparently normal, pale red, not inflamed, and on being wounded bled but slightly. Arsenious acid was then applied, and the patient was requested to come again in the evening. He came, beaming with satisfaction, and said his tooth was cured. However much the masticating surface was touched no pain was felt. Herr Hartmann then drilled the pulp cavity completely, it was fully developed. The pain must have been caused by extraordinarily sensitive dentine; as the other teeth are wearing out the same thing may before long happen again. Herr Hartmann means then to try alleviation by the use of sap. infirm. and if that fails will proceed as before. At present the tooth of the patient is antiseptically filled and he is perfectly well.

THE INDEPENDENT PRACTITIONER DENTISTRY IN FRANCE.

By K. HOLMS.

This article is written with a view to supplying reliable information about the French dentists, being, in fact, intended to show the unfairness of another article which appeared in *Items of Interest*, and which spoke very slightly of French Dentistry.

In this article it is stated that "England has but one dental college, and the rest of Europe none," and that "France has not even yet a regularly organised dental society." This is inaccurate, for there was a dental college already in operation in Paris in 1880. This the work of a number of skilful and conscientious dentists. This college is known as "*l'Ecole et Hôpital Dentaire Libre*," and is in the Rue Richer.

Another school was organised and opened in January, 1884, under the auspices of the "Odontological Society of France," and under the name of the *Institut Odontotechnique de France*." The directors have leased an old palace in the Rue de l'Abbaye, and in the same building are held the monthly meetings of the Odontological Society. This society, founded in 1878, with Dr. Andrieu as president, is the outgrowth of the *Union de Chambres Syndicales*, which dates back several years farther. The more advanced in the profession to-day visit one another's operating rooms and laboratories, and a man's standing depends entirely upon his skill and not upon his nationality.

In the article referred to, it was stated that the French dentists were poor operators. To contradict this Mr. Holms quotes in extenso, two lectures by M. Andrieu, but as we have already presented abstracts of these to our readers we refrain from quoting them.

SOUTHERN DENTAL JOURNAL.

THE ADVANTAGES OF GOLD AS A BASE FOR ARTIFICIAL DENTURES.

By W. W. FORD, Macon, Ga.

Before discussing the subject specifically, he points out the peculiar characteristics of gold as a distinct metal. Gold is a metal that has been known and used from the earliest time.

Gold is a sacred metal, as shown by ancient records; it is called a royal metal, because no one acid will destroy it. Fire does not decompose it. It neither rusts, or corrodes. It is also said to be a therapeutical agent of great value.

"It is one of the finest, and most pleasant and certain nervines that can be used; it acts directly on the brain, and is used by skilful physicians with eminent success in the treatment of softening of the brain, and for other brain diseases. It quiets the nerves, and gives to them a perfect normal and physiological condition and action." It is generally used in the form of a chloride, or double chloride. It is one of the best hypnotics, and is used to cure inebriety in all the inebriate asylums. Used for a length of time it can be dropped without any inconvenienco. It may be melted or

fused in the highest heat, and cast in the sand or poured into a basin of water, and it remains unaltered.

Many will say—both patients and dentists—that it is too expensive. He denies the assertion, since the cheapest work is the work which does its duty best and lasts longest. He cites a case where gold was used, and the full set of teeth were in perfect order after twenty years.

He has known hundreds who have gone down into the grave with the same kind of work in their mouths. “Are they not cheaper at any price than the miserable, so-called cheap sets made on the filthy, fetid, disgusting, decaying, saliva absorbing, stinking vegetable bases, that ruin the gums, cause entire absorption of the alveolar process, and destroy the health, and cause dyspepsia, and misery, and premature death.”

Gold is as yet the only perfect, healthy, durable, and unchangeable base for artificial teeth that has been discovered. No other base gold can or should take its place. It is pure, it is adaptable, it is a conductor, and a preserver of the parts over which it rests. It will keep the mouth in physiological condition. It admits of a high polish on both lingual and palatine surface. It can be made one-third the thickness of either celluloid or rubber, and will, if anything, increase the sensation of taste, by exciting a free flow of saliva from the parotid, sublingual and submaxillary glands. He knows no objections to gold as a base for artificial teeth. The theory of non-adaptibility is due to a lack of manipulative skill on the part of the operator. A man that can't make a gold plate can't make a celluloid or rubber one, as it should be made.

Literary Notices and Selections.

THE ACTION OF SALICYLIC ACID UPON TEETH.

By Prof. CHARLES MAYR, Springfield, Mass.

To determine the exact action of salicylic acid upon teeth, on December 11, 1885, I put a freshly extracted tooth, in its natural condition of moisture and organic substance, weighing 1810 mgrs. (30.2 grains) into a solution or rather mixture of 1230 mgrs. (25 grains) of salicylic acid, with 40 c. c. m. (1 fl'd oz.) of water.

On December 26th, after having shaken up the mixture repeatedly, I took the tooth out. The enamel had not suffered very much, but the roots were softened to a considerable depth; from the surface of the enamel, which otherwise did not appear to be especially softened, I scraped off a powder weighing 5.7 mgrs. ($\frac{1}{105}$ grains), and containing 14 per cent. of organic substance. The tooth weighed 1720 mgrs. ($26\frac{2}{3}$ grains); from this it would appear that it had lost about 90 mgrs. of lime salts ($1\frac{3}{7}$ grains). But this assumption would be erroneous. The whole liquid, water, salicylic acid and dissolved lime salts, was evaporated and ignited, and it showed that 160 mgrs. ($1\frac{5}{16}$ grains) of lime salts had been removed, and, as it appears from the above figures, partly substituted by water. I had first carefully analyzed the salicylic acid, and found it free from all inorganic substances. The inorganic salts which the salicylic acid had removed from the tooth had the following composition:

Lime, (Ca O.)	30.2	per cent.
Magnesia, (Mg O.)	5.5	„
Phosphoric acid, (P ₂ O ₅)	38.5	„ with a trace of silica.
Carbonic acid, (C O ₂)	24.8	„

100

From these facts it is plain that, in 360 hours, a large excess of salicylic acid acting upon a tooth, removed 163 mgrs. ($2\frac{2}{3}$ grains) of lime salts. This gives the removal of about $\frac{1}{2}$ mgr. ($\frac{1}{120}$ grains) of lime salts in one hour, and the whole tooth would be decalcified in 150 days. If a preparation of salicylic acid is put into a tooth, the rate of decomposition of that tooth by the acid is probably much slower still. The tooth experimented on had a carious cavity. The chemical action of the salicylic acid upon the mass in the cavity was apparently the same as on the sound tooth. For a short application, therefore, the salicylic acid is not very dangerous but like all small actions it will amount to a good deal in time. The tissue decalcified by salicylic acid is otherwise kept healthy, hence the damage is less than that from a decalcification by vinegar or sulphuric acid.—*Independent Practitioner.*

THE TEETH OF DIFFERENT PEOPLE.

By PARSONS SHAW, D.D.S., Manchester, England.

In disregard of the great law that we should "not judge by appearances but judge righteously" (which is a fundamental one in all scientific investigations), perhaps there is no subject on which there is more dogmatic assertion, with less knowledge of the facts, than on the conditions and comparative value of the teeth. And these assertions have become incorporated into our text-books and pass current, when they are in most cases merely the result of ignorance, prejudice, and misrepresentations for a settled purpose. As I have had opportunities for observing the teeth of Americans in different parts of Europe, as well as some of the woolly-haired Africans, I will record my observations and conclusions, and hope that others will follow with their experience until this matter is settled on a solid basis.

It is a favourite way in Europe of accounting for the superiority of American dentistry by assuming that dentists are more needed in America than elsewhere, owing to the more rapid decay of the teeth. When we get to understand the meaning of this assumption, we find it to be only a part and parcel of a great system. It is taken for granted by European authorities that everything must be wrong in America, as the government, fiscal policy, social life, religion and morals are, according to their views, all based on a false foundation. And then it is argued that, as under pernicious institutions no people can prosper, it is, therefore, natural to find a gradual decay of the Americans, politically, morally, and physically. The few who do not quite condemn American institutions attribute this assumed deterioration to the climate; but the degeneration of the Americans in general, and of the descendants of the Puritans in particular, is almost universally taken as a settled fact. The reason why it is not more apparent is owing, so we are assured, to the new blood brought in by emigration. When the average American comes in contact with these views he has no suspicion of their real meaning, and is quite too apt to adopt them without reflection. Or if he begins to make investigations it is usually among his foreign patients, by whom he

is misled either through their preconceived notions of American degeneracy, or their conceit. It comes about in this way. We know that teeth decay a great deal before patients are aware of it, and it is a common thing for them to say their teeth have gone within a few months, when the slightest investigation shows they have been decaying, more or less, for years. It is a common experience in my practice for a foreigner to assure me his teeth never decayed until he came to England, simply because it was after he came here that he happened to have his first toothache, and never had been to a dentist to ascertain the real condition of his teeth. For the same reason the Englishman is certain his teeth never decayed until he went to live somewhere out of England; and the man from the South is equally certain his teeth were all sound when he came to the North; and the man from the North avows he never had a speck of decay on his teeth until he went into the South; and so it goes all round the compass. It is, therefore, no evidence when the foreigner tells the Americans his teeth were all sound until he came to America, and that teeth do not decay in the "old country" as they do there. His assurances are based upon ignorance of the progress of decay in his teeth, and of the condition they would have been in if he had never emigrated, strengthened by the preconceived notions which grew out of his patriotic bounce. In so readily accepting these errors I am not certain there is not a good deal of something of the same sort of unconscious patriotism in the American who takes for granted the foreigner's view of American teeth. I suspect the logic is something like this. Its postulate is the common and vulgar notion that a higher civilization is only obtained by a corresponding loss of physical powers. Therefore, if we assume that the American has a higher civilization than that represented by the foreigner who come to his country it follows on his postulate that his teeth decay.

Just as it is a mistake that higher civilization implies physical degeneracy, so it is an error to assume that the classes who hereditarily live by labour in old and settled countries are physically superior to the hereditarily cultured classes.

It is only in new communities that all sorts of people are mixed up together, and wherever the people are settled down into the regular routine of life they are eventually divided into classes (not by the possession of wealth, patents of nobility that are real or assumed, or by any other artificial means,) but by a course of natural selection based upon immutable laws. There are instincts, modes of thought, motives, ideas of what promotes happiness, and dietary and sanitary regulations which purify and elevate ; and there are those which not only prevent any elevation, but must degrade. So that in the same community we find people with entirely different modes of thought, incentives to action, and consequent results. It is inevitable, therefore, that in the long course of time different classes should arise with fixed types, which are intensified by the constant intermarriage of those of the same blood, social standing and character. No American who has not come in contact with the various classes in Europe, and not had an opportunity to study their characteristics, can have any idea of the radical difference between them, owing to the wide difference in the prevailing notions which govern all their actions. There is but little community of sentiment, except in their common humanity. This is almost at once revealed to those who have to treat their diseases. The superior classes are invariably grateful, patient, and strictly obedient to all commands as to diet, sanitary arrangements and medicines, while the lower orders seem to hate obedience, and systematically disregard the most imperative instructions, especially as to diet, and preclude the possibility of the exercise of any feeling of gratitude by the almost invariable habit of endeavouring to make it appear, in every transaction of life, that it is they who are conferring the favour. The inevitable result of the natural selection I have named is that those who obey the mental, moral and physical laws of life arise to the top, while those who habitually disregard either set of these laws sink to the bottom of the social scale. It is true there are at work, at all times, unexpected and unpreventable circumstances which appear to set aside this natural selection, if not altogether to defy it. And the struggles of such of the lower orders as have got elevated

out of their real sphere by some stroke of luck, to maintain themselves in their unnatural position by the innumerable devices to which they resort, are apt to lead their less fortunate and unreflective fellows of the same order to imagine that men are lifted up by means of these low devices and mere assumption. But they are only a part of the system which eventually still more degrades; and it remains none the less certain that when a class rises to the top of the social scale and remains permanently there it is because they obey, on the whole, the great moral and physical laws; and that the lower classes remain such because they are wedded to opinions, appetites, instincts, prejudices, modes of thought and ways of life which cannot elevate and must degrade. In accordance with the foregoing, I have found that those who belong, by inheritance, to the upper classes, all over Europe, are in almost every way the superiors, mentally, morally, and physically, of the permanently lower orders. The English gentleman has always beaten the common fellow at everything, especially in roughing it in the new countries to which all classes have emigrated from the beginning of the English colonies. It is because the descendants of the very best blood of Europe, and of England in particular, have dug and delved and sowed and reaped from Maine to Georgia for over two centuries, and still give dignity to labour in all parts of America by uniting it to refinement and intelligence, that we have the elevating tone of American thought and feeling. You cannot create a "gentle" man except out of a refined and gentle nature. Wealth, the tailor, the University, and "society" can only put on a transparent surface polish if there is not the hereditary elevating instinct which nothing can smother; and the snob's descendants invariably go back, sooner or later, to the class from which he sprung; when, for a certainty, their last state is worse than their first. It is, therefore, an entire mistake to suppose that the peasantry of any country have better teeth than the gentry, or are in any respect their superior. It is quite the **other** way. The English are divided into the upper, lower, and middle classes, or, as Adam Smith puts it, into those who live by

rents on land, those who live by labour, and those who live by profits. The upper class is distinguished by simplicity of manners and of personal living, cleanliness, high integrity, and great frugality. With plenty of fresh air and exercise, and a simple diet, they are very strong and have excellent teeth. The people of the lower class are uncleanly, eat their food miserably cooked, are passionately fond of dainties, are imprudent in all their doings, and so improvident that, as a rule, they can not lay out their earnings so as to make them spread over a single week, but want food before the new wages come in. The agricultural labourers get plenty of fresh air, and from dire necessity have a simple diet, and in consequence somewhat overcome the evil results of their instincts, and have fairly good teeth. But the artisans among the lower orders have not these compensating benefits, and the effects of their faults are intensified by living in large towns, working in impure air, and above all, by having good wages to spend in indulging their appetites. The consequence is that they have bad teeth. The middle class is a thoroughly mongrel race, made up from all ranks and classes. It consists of the merchant, farmer, professional man, tradesman, etc. This class is as mixed in England as in the colonies. The uncertainties of all profit causes immense changes in each generation. The great merchant may be the son of a farm labourer and his clerk may be grandson to a lord. It is, therefore, but natural that we find in the middle class all sorts and conditions of teeth, from the very best to the very poorest. It will be a mistake to suppose that because the teeth are bad we can say the patient is from a low family, for I have known poor teeth to go with the longest pedigree; and among the artisans I have seen splendid teeth. It is only the general average I have been giving. The Welsh peasantry have the poorest teeth I have ever met in Europe. They are pearly and pretty in youth, but soon decay. The lowest class of Germans have large teeth, as do most inferior people, which serve them fairly well so long as they live out of doors and eat wholesome bread. But they are deficient in vitality, have but little stamina, and if attacked by decay crumble away rapidly. The upper class of Germans have good teeth

but not so vital as the English or the Americans. The French of Gothic origin (see Magitot) have teeth much like the Germans ; but those of Celtic origin have vastly better teeth. There cannot be a doubt that among the pre-historic people of Europe the Celts had the best teeth. The Irish are a curiously mixed people. The peasantry, who are the descendants of the aborigines, have coarse, large, and not good teeth. All around the coast of Ireland there settled in ancient times, the Northmen, and their descendants have good and strong teeth. Then a very much larger proportion of the Irish are English in origin than is admitted, and their teeth are much like the English. The North of Ireland is almost wholly of Scotch descent, and here we find good, strong, and vital teeth. There is even a more marked difference in Scotland than in England between the different classes. The Scotch peasant has fairly good teeth, and better than his English neighbour. Among the higher classes of Scotland we find the teeth fine in form, compact in structure, and highly organized. In all probability the aristocracy of Scotland is the finest race in Europe. The Danes, Swedes and Norwegians, being a superior race, have fine teeth. The Spanish teeth decay early, and the Portuguese still sooner. The Greeks (I mean the real Greeks) have good teeth, as a rule. They compare well with the English, and so do the Turks and Arabs. What little experience I have had with the woolly-haired Africans shows they have very poor and dark yellow teeth, not white, as is so persistently asserted, with unusually large roots. Now, how do these teeth compare with the Americans? No man who will take the trouble to make careful observations will, I think, come to any other conclusion than that, on the whole, the teeth of Americans for strength, fineness of structure, and vitality, are decidedly superior to those of any other people. And conservative dentistry flourishes in that country, not because the teeth are unusually bad and need more than usual attention, but from the very opposite reason. It is because the teeth of the Americans present a very much larger proportion, than that of other people, of those which experience shows the dentist can save by proper operations. The great drawback to

conservative dentistry in other parts of the world is found in the fact that the teeth are, excepting among the better classes, relatively poorer, and can not be saved by the same skill as can the American's. There are more dentists in America because of the general superiority of the teeth, the natural desire to save them, and the comparative ease with which this is accomplished. And dentistry will remain, in most other parts of the world, because of the nature of the teeth of the mass of the population, to a very great extent very much what it always has been, the means for supplying the inevitable false ones.—*Archives of Dentistry.*

THREATENED MANIA FROM RETARDED WISDOM TEETH.

By DR. W. T. LA ROCHE.

At a meeting of the Odontological Society, April 24, 1883 (reported in the *Dental Cosmos* for October, 1883, page 540), Dr. Wm. Jarvis, of Brooklyn, mentioned a case brought to his notice by a physician. The patient was a gentleman about thirty years of age, in robust health, and of good habits. In January or February of the preceding year he seemed to have become somewhat morose, rather ill-tempered and quick to take offence, and from that the symptoms gradually ran into those of acute *mania*, so that he was not to be depended upon at all, and required a nurse with him all the time. The gentleman was advised by his physician to visit Bermuda for change of air and scenery. He did so, and returned in pretty much the same condition as when he went away. The family and his physician were unable to get any clue whatever as to the cause of this malady. An article had been published in the *Sunday Times* in regard to mania arising from disturbance of the tooth-pulp, and since reading that article the gentleman's family had recalled to mind the fact that at the very time when this disturbance commenced he went to a dentist to have a tooth filled. The dentist removed an old filling, and told his patient at that time that there was a little pus and blood exuding from the pulp-cavity. The operation was quite painful, and there was a great deal of pain in the tooth for a week afterward ; also

disturbance of the aural nerves ; his hearing was affected, and he was troubled with neuralgia on the same side of the face.

A similar case is on record where a Boston gentleman, thirty-three years of age, from disturbance of the pulp, became quite insane, and on removal of the tooth in that case complete recovery followed. I mentioned the case of a patient at that time in my care, who had been in my hands for nearly two years, and whom I was treating for retarded eruption of the wisdom teeth. A number of physicians diagnosed his disease as brain trouble *per se*, and treated him accordingly. In my remarks I said that the above cases showed that the *nerves* may be very seriously affected by the eruption or diseased conditions of the teeth. I was asked by a member if the gentleman was insane. I answered that he was very near it, and that the gentleman himself thought he would become insane, and that his physician, Dr. Dieffenbach, had said to me, "This man will be a subject for the lunatic asylum if he is not relieved of those wisdom teeth." I promised to give the Odontological Society a full history of the case at some future time. His long protracted illness commenced with pain in the head in July, 1878.

My attention was first professionally directed to the case of Mr. W——, by being requested to extract a carious left superior sixth-year molar in December, 1881, but on account of the very delicate condition of the patient I did not extract it till about the 1st of February, 1882, some five weeks later. The pulp had been devitalized and the tooth prepared for filling while he was in the country, but on account of the dentist attending to it having been unexpectedly called away the operation was not completed. I had filled several teeth for Mr. W—— when he was twelve years old, and I found them in good condition. I said to him, "You have lost all your wisdom teeth except one." His reply was, "Oh, no ; I have never had a wisdom tooth extracted." I made a more thorough examination a few days later, and taking his age into consideration (he was in his twenty-seventh year), I became convinced that the real source of his long and severe illness and brain trouble was caused by the retarded eruption of the wisdom teeth. Knowing that he was at this time in

the hands of a specialist, who was treating him for brain disorder, I told him at once that I did not believe that his trouble was with his brain. This surprised him greatly. I told him I was sure his brain trouble was caused by reflex nervous action from the source above stated. At this time but one of his wisdom teeth had normally erupted ; this was in the right superior maxilla. Judging from the griping pains in his jaws, extending therefrom to the back of his head, and locating the non-erupted wisdom teeth, confirmed me in the opinion that my diagnosis was correct. I refused to take his case as long as he was in the hands of a specialist, being treated for brain trouble. This point being satisfactorily settled, I then undertook his case. He told me that Dr. Wm. A. Hammond concurred in my diagnosis. In each case I found it impossible to remove the wisdom tooth without first removing the twelfth-year molar. My first operation was to extract the upper left twelfth-year molar, hoping thereby to afford relief by so doing. This was accomplished in April, 1882. At the same time I endeavoured to extract the wisdom tooth also, but on account of its position, and the patient being so weak and delicate, I did not succeed. It was not deemed advisable to administer an anæsthetic, and without one the shock was to be dreaded. It was not until the following December, seven months later, that I was able to extract this left superior wisdom tooth, during all of which interval he was in very great pain and suffering constantly from excessive nervous prostration. This tooth had three diverging roots, all of them largely exostosed. The effect of the operation was almost immediate, the benefit being very marked, and he was soon able, for the first time in three years to resume business, and take part in social enjoyments. His health continued good until his return in September from the Catskills, where he had spent the summer, when he reported to me that he was again suffering in a manner similar to that which he had suffered previous to the extraction of the above-mentioned tooth. I found on examination that the right inferior wisdom tooth was giving him trouble. Previous to his going away I had told him that, at the first indication of any trouble in the lower jaw, I would advi

the extraction of the twelfth-year molars at once. I now reiterated this advice and urged its immediate adoption. Hoping to relieve the pressure and mitigate the pain, the right inferior twelfth-year molar was extracted in October, 1882 ; but to my disappointment the operation did not afford perceptible relief. I now hoped that the wisdom tooth would erupt in the normal way, but it did not. After a few weeks the absorption of the surrounding gum-tissue revealed the exact position of the retarded tooth. I found it lying diagonally across the ramus, a position from which it was very difficult to remove it. I had much difficulty in finding an instrument that would grasp the tooth. I finally removed it on December, 24, 1882, an interval of six weeks. This tooth was also bifurcated and exostosed. The effect of this operation was not what I had hoped for, the pains continuing but changing to the left side. Owing to the very nervous and prostrated condition of the patient I was obliged to defer for a few days the extraction of the left inferior twelfth-year molar. This was done in February, 1883. At this time I did not cut to find the wisdom tooth. I could see no external evidences of it. As before, I waited, hoping relief would follow, but, as the pains continued without mitigation, shortly thereafter I made an examination and struck the wisdom tooth deeply imbedded in the ramus. It really appeared as though the tooth tried to go out through the facial side of the ramus. The patient continued to suffer intensely. I really thought he *would* lose his mind. One of his physicians had previously said to me that if the cause was not removed he would certainly become insane. He suffered so much that, at his urgent request, I consented to attempt the extraction of the tooth in May,—some twelve weeks later,—though feeling almost certain that the attempt would be fruitless without an anæsthetic ; and this proved to be true. His very delicate condition rendered it impracticable to administer an anæsthetic, or to do anything to cause a sudden shock. This actor in the case greatly hampered me all through. His eyes too, became affected sympathetically. Sometimes he could not see at all during the spasms of pain. He would be almost delirious at times with the severe pain in the back

of the head. As he described it, his head would be sore to the touch. With reference to anæsthetics, Dr. Hamilton, who, at one time had been his physician, had refused to sanction their use in his case. While I duly respected the high authority of this opinion, and had been governed by it, nevertheless I did not concur in it. Finally, on or about the 9th of June, I succeeded in extracting this tooth, the patient having been first placed completely under the influence of æther. I was assisted in this operation by his attending physician, Dr. J. F. Davis. The tooth was a very remarkable one, both as to location and formation. As to location, it was inclined, by reason of its extreme exostosed condition, to make its appearance through the maxilla on the facial side; in fact, after the extraction, the face there was extremely sore, a slight protuberance showing. As to formation, it was bifurcated, and its exostosed condition had united the bifurcation, so that the nerve-currents were, by the progress of the exostosis partially cut off. I dressed the aperture carefully every day with a weak solution of carbolic acid, alternating with permanganate of potash and wine of opium; but on account of the terrible strain upon the parts attendant upon the great force necessary in drawing out the inverted wedge-shaped exostosed roots, there was much inflammation to contend against. By the latter part of June he had so far recovered that he was able to leave the city for the Isle of Shoals, where he remained in a comfortable condition until about the 6th of the following September. Shortly after his return home he complained to me of pain in the same side of the face. From about the second week in September he had a severe relapse, and at times, as before was almost crazy with pain. About the 1st of November following I was obliged to use the engine bur for the purpose of re-opening the aperture made by the extraction of the wisdom tooth. This I did thoroughly, breaking down the septum between the wisdom tooth and the twelfth-year molar. Prior to this, on account of the severe prostration of the patient, I had only partially opened the cavity. After the operation he revived again, gained strength, and we both thought he was now going to be well; but to my surprise

he was again attacked with pain in the superior right side, in the only normally erupted wisdom tooth that he had. As I have before stated, I had extracted the right inferior wisdom tooth and twelfth-year molar, consequently these superior teeth had no antagonists. Elongation in both teeth was now apparent. A very slight fissure exposure was found in the wisdom tooth and the dentine exceedingly sensitive. Both teeth became very sore, and the least pressure of the finger was painful. I therefore advised the extraction of both; nevertheless, I could not persuade him to have it done without an anæsthetic. During the next five months his health was very poor and his general condition low. He was in the care of Dr. E. B. Pardee, who was at first averse to giving him any anæsthetic, but finally, as he had made some improvement under his treatment, on the 30th May he assisted me in administering the nitrous oxide gas, and I extracted these teeth. Thus, after a series of operations and treatment by me extending over a period of three years, and treatment by many physicians—some ten, I am informed—for a period of more than six years, the causes having been removed, the brain trouble ceased, and has not returned.

PRESIDENT JARVIE.—In regard to the case which I reported about two years ago, and which is referred to by Dr. La Roche, I would say that there has been no improvement in the condition of the patient since that time.—*Extract from N. Y. Odontological Society Proceedings—Dental Cosmos.*

FOOD—ANIMAL AND VEGETABLE.*

By E. J. LILLY, M.D., D.D.S., Circleville, O.

A food, according to the usual definition, is a substance which, when introduced into the body, supplies material to renew some structure, or maintain some vital process. And most people show, in every-day conversation, that they consider the main object of food to be the replacement of the *materials* of the organism, while, in fact, its real object is the renewal of the *energies* which have been dissipated in work. A man, like a steam engine, cannot give out energy without

*Read before the Ohio State Dental Society.

his appropriate fuel, and if the fuel is not supplied, the fire goes out and the man dies.

Food-stuffs and coal agree essentially in the chief characteristics of their chemical composition. Both consist mostly of hydrogen and carbon, and both possess energy in virtue of the fact that their affinities for oxygen are not satisfied. Water contains hydrogen, and carbonic acid contains carbon; but we can get no energy out of these, because in them the oxygen has already united with the atoms for which it had affinity, and the separation necessary for dormant energy has ceased to exist. But in bread, potatoes, meat, or coal, the hydrogen and carbon are ready to unite with their equivalent of oxygen whenever the chance presents. All obtained their energy in the same way: The rays of sunlight falling on the original trees or plants, separated the oxygen from the water, and carbonic acid gas from the air, and built the hydro-carbons in their tissues. The force thus stored remains dormant till an opportunity occurs to reunite with oxygen, when it will once more assume activity, producing mental, physical and mechanical energy. The only serious difference between food and coal is that foods contain another element, nitrogen, as well as hydrogen and carbon, and this nitrogen is absolutely necessary, if the animal is to continue to live.

Foods are derived from earth, water, and air and may be solid, liquid, or gaseous, organic and inorganic. The popular notion of food as solid substances derived from animals and vegetables, while comprehensive, is too exclusive, since the water we drink, the air we breathe, and certain mineral substances found in the earth, are of no less importance as foods. It is understood the structures of the body are in a state of continual change, so that atoms and molecules which are present at one hour may be gone the next; and when thus consumed by work, the tissues will be so far wasted, unless the process of waste be accompanied by renewal. This is brought about by the ingestion of such materials as, by vital activity, may be transformed into tissue.

Vegetable food contains, as its essential nutritive elements, albuminates or nitrogenous compounds, fatty matter, and hydrates of carbon, with water and nutritive salts. Such food,

therefore, contains the same elements as that derived from animals; but in point of digestibility the two differ widely, meat being very much more easily digested than vegetable food. What renders the latter harder to digest is the fact that the albuminoid substances, fatty matter, and starch are there incased in a coating of cellulose, to break up which requires some time. Starch, before it can be absorbed, must first be changed into sugar, which process may occur in the mouth, if the food be chewed long enough, or in the intestines, when it comes in contact with the pancreatic and intestinal juices.

Of all the influences which determine the life of the individual, and on which his weal and woe depend, undoubtedly the nature of his food is one of the weightiest. Every one has for himself experienced how not only the strength of his muscles, but also the course of his thoughts and whole mental tone are affected by the nature of his food. Every nation has its peculiar way of cooking; but the Yankee mode of spoiling eggs and concocting rank and indigestible dishes, delusive to the eye, deceptive to the palate, and a deadly snare to the digestive organs, is purely American. The stomach may not be the seat of the soul, but the road to the heart and soul, and the health of the brain, lie through it; and indeed it is said that "a man's heart and stomach are interchangeable terms."

Foods are classed into different groups, according to the influence they have on the body, in virtue of their essential constituents. And though the classification, like every artificial arrangement in nature, is only approximately correct, it gives some ground to stand on. Blood-formers, or albuminates, are those albuminous materials which constitute the nutritive elements of the blood, and enter into the composition of the ligaments, bones, and muscles, on which the exertion of force specially depends. The heat-producers, or respiratory foods are those rich in carbon; these specially serve to support, with the aid of inspired oxygen, the process of combustion so necessary for the purposes of the organism. Finally, there is a third group of substances—the nutritive salts—which are of an inorganic nature, and which, after the

combustion of the food remain in the shape of ash. All these food materials are essential, since with them the organism is built. Life is an unceasing process of waste and repair, and the food must make good the loss the tissues suffer every instant. We must supply even those substances which are contained in the living body in small quantities, for on these depend the activity of important organs. Such substances are common salt, magnesia, lime, phosphorus, iron, and others less common. But none of these groups is, by itself, sufficient for nutrition. They must all be combined. Blood-formers, heat-producers, or nutritive salts are not separately foods, but only factors of food ; each as indispensable to the organic processes as air and water, but each incapable by itself of supporting life. One cannot live on albumen or on fat. Without the phosphate* and other salts of lime neither bone nor tooth substance would be formed, no matter how much pure albumen we ate; on the other hand, without albumen no muscular tissue would be made, though we were to gorge ourselves with sugar and salt. Finally, without fat, no brain. But we properly enough give the name of food to milk, meat, and bread, for in them all in different proportions, the three conditions are present; and in order to obtain them in definite quantities, mixed foods must be used. Now, in nature they are not distributed in any such definite proportions, there the greatest diversity is found. One food contains principally blood-formers ; another heat-producers ; this contains only one of the nutritive salts, that another. However, we must not eat a too mixed diet; for if one swallows without thinking, and often without knowing, incompatible and warring articles of food or refreshments at the same meal, he turns his stomach into a sort of chemical laboratory, or fermenting tank. Such experiments are sure to make disturbance and various internal commotions, disagreeable and perilous in their very nature. It should need no chemical analysis to tell us this, experience is enough.

*Not even the primary cells, without the phosphate.—WATT.

(To be concluded.)

Dental News

EDINBURGH DENTAL STUDENTS' SOCIETY.

The First Annual Dinner of the Edinburgh Dental Students' Society was held in the Albert Hotel, Edinburgh, on the evening of Friday, the 17th ult. Mr. W. Bowman Macleod presided, and Mr. Edwin A. Cormack acted as croupier. There were about fifty gentlemen present. After the Royal and patriotic toasts the Chairman proposed "The Edinburgh Dental Students' Society." In doing so he said it was fully five years since a Dental School was established in that city. It had begun with two or three students, but it had increased both in the number of students and in the number of patients deriving benefit from the hospital attached to the school, and it was thought that the proper time had come when they should form such a Society as theirs, having for its objects the consideration of matters generally and specially pertaining to Dental Science, the advancement and welfare of its members, and the facilitating of social intercourse among them. Whilst they gained knowledge by an interchange of ideas they also gained a great deal in learning to express their ideas in such a way as to command attention, and he did not doubt that many gentlemen around that table much older than themselves, felt, when called upon to speak in public, the want of practice which such a Society might have afforded them. It enabled them to speak with that clearness and with that command of temper which alone could command a patient and respectful hearing. From the fact that the Hospital had been established before the Society, that the latter had only been called into existence by the necessities of the case, and that there was a sufficient number of students to give it cohesion and life, he argued that there would be little difficulty in keeping up the life and vigour of the Society in the future.

Mr. E. A. Cormack, in reply, said they intended to invite the leading men throughout the profession, not only in the United Kingdom, but also in the United States, to furnish them with papers on their different specialities; and they hoped

a number would be found willing to aid them in this respect. Efforts would be taken to keep the young men well forward. They were greatly indebted to Mr. Macleod, their Honorary President and Mr. Page, their Secretary, for the interest they had taken in their Society. Other toasts were "Kindred Societies," proposed by Mr. E. P. Rose, replied to by Mr. J. S. Amoores; "Success to the Edinburgh Dental Hospital," proposed by Dr. Brevis, replied to by Mr. J. Leslie Fraser; "The Dental Lecturers," proposed by Mr. James Johnstone, replied to by Mr. G. W. Watson; "The Strangers," proposed by Mr. Frederick Page, replied to by Mr. Boyd Macfarlane; and "The Chairman," proposed by Dr. William Wilson.

The proceedings were pleasantly varied by songs, pianoforte solos, etc.

BRITISH DENTAL ASSOCIATION.

WESTERN BRANCH.

President, W. A. Hunt, Esq., L.R.C.P., M.R.C.S., Eng.; President elect, Geo. C. McAdam, Esq., L.D.S., Eng.; Vice-Presidents, C. Spence Bate, Esq., F.R.S., L.D.S., Eng.; G. T. Parkinson, Esq., L.D.S., Eng.; T. Cook-Parson, Esq., M.R.C.S., Eng.; R. Rogers, Esq., L.D.S.I.; Charles Gaine, Esq., M.R.C.S., Eng. The annual meeting will be held at the rooms of the Woolhope Naturalists' Field Club, Free Library, Hereford, on Monday, the 24th August, 1885.

The order of proceedings will be as follows:—9.30 a.m., meeting of Council; 10.30 a.m., General meeting of Members for the transaction of business—President's Address—Reading and Discussion of Papers; 2 p.m., Adjournment for Luncheon; 3 p.m., Business of meeting resumed; 7 p.m., Dinner at the "Green Dragon" Hotel. Tickets 6/6 each. Members intending to be present are requested to make early applications to Mr. McAdam, King Street, Hereford.

Demonstrations have been promised by Mr. F. H. Balkwill of Plymouth, on "Adhesive Gold Filling with Smooth-pointed Instruments;" and by Mr. J. T. Browne-Mason, of Exeter, on the "Herbst" method of Stopping Teeth. Dr. W. H. Waite, of Liverpool will exhibit some specimens of "Pre-historic

Dentistry," and communications have been promised by Messrs. Apperly and Hellyar. Members are invited to introduce subjects for discussion. There will be an exhibition of Models, Instruments, &c.

APPOINTMENT.

Mr. W. R. Ackland, L.D.S., Eng., has been appointed Demonstrator to the Dental Hospital of London, *vice* Mr. Hern resigned.

DENTAL HOSPITAL REPORTS. NATIONAL DENTAL HOSPITAL

MONTHLY STATEMENT OF OPERATIONS FROM JULY 1st. TO JULY 31st.

Number of patients attended	1671
Extractions { Children under 14	341
Adults	533
Under Nitrous Oxide	578
Gold stoppings	63
Other Stoppings	606
Advice and Scaling	274
Irregularities of the Teeth	257
Miscellaneous	142
Total	2794

ISIDORE FREDERICK PRAGER, House Surgeon.

MONTHLY REPORT OF CASES TREATED AT THE BIRMINGHAM DENTAL HOSPITAL, JUNE, 1885.

Number of Patients attended	838
Extractions	668
Cases treated under Anæsthetics	13
Gold Fillings	11
Other Fillings	192
Miscellaneous	23
Total	907

JULY, 1885.

Extractions	706
Gold Fillings	6
Other Fillings	231
Miscellaneous	32
Anæsthetics	19
Total	994

FRANK H. GOFFE, L.D.S., Eng. and Edin., House Surgeon.

OBITUARY.

THE DEATH OF DR. FORBES.

Dr. Isiah Forbes, one of the oldest and most prominent dentists in the West, breathed his last July 15th, at his residence. Dr. Forbes' reputation as a dentist was established throughout the whole country. He took the greatest interest in the advancement of dental surgery, and lost no opportunity of showing his love for the profession. He leaves a wife and five children, all of age and occupying prominent positions in society. Dr. Isiah Forbes was born in Albany, N.Y., March 25th, 1810. His father was a prominent architect, who unfortunately, lost his means, so that Isiah was compelled to take an imperfect public school education as his sole inheritance. He went to New York city, where, finding no satisfactory employment, he visited Buffalo, remaining there eighteen months. In 1834 he returned to New York, where he arrived just after the great fire, and entered the dental office of Ambler and Kingsbury. He mastered his profession, and in 1836 hung out his sign, meeting with fair success and soon having a fine library and well-furnished office. He generously allowed a friend of his, for economy's sake, to use his office as a sleeping room, who during Dr. Forbes' absence to attend his sister's funeral, sold out the furniture, library and dental instruments, and absconded with the proceeds. Dr. Forbes settled in St. Louis in the spring of 1837, and through the kind assistance of Mr. Wade, who then kept a hotel on the corner of Second and Vine Streets, opened a dental office within a week of his arrival and rapidly built up a lucrative practice. In 1849 he retired from practice and embarked in the milling business, which in eighteen months absorbed his accumulated capital and he resumed his profession.

ANSWERS TO CORRESPONDENTS.

Communications have been received from Dr. Hare, Bristol; Mr. Frederick Page, Edinburgh; Dr. John Harper, Washington; Mr. S. S. Lever, Miss Yates, London; Mr. J. S. Prager, Mr. F. H. Goffe.

S. S. Lever.—We have no information upon the subject, but hope to be able to supply some next issue.

British Journal of Dental Science.

No. 423. LONDON, SEPT. 1, 1885. Vol. XXVIII.

EMERGENCIES OF ANÆSTHETISING, AND HOW TO MEET THEM.

No. 1 PRELIMINARY.

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London, and the Hospital for Women, Soho Square.

The experience of all experts in this field goes to show that even the best of us are liable to accidents. In scanning the masses of literature about this subject, one is not surprised to find that while experts have "bad cases" they are less apt to lose lives than others whose experience is more limited and whose resource is less ready. The greatest danger which besets patients is, of course, the lethal effects of the anæsthetising agent employed; but there is another danger which I deem scarcely less deadly in its results, and that is—hesitation on the part of the administrator. The hesitation to act when danger is surely present, and the hesitation to desist when symptoms supervene which are not the constant accompaniment of the action of the particular agent in question. The first of these causes for hesitation arises from a failure on the part of the anæsthetist to recognise the thousand and one signs of dangers, tokens which, to the practised eye, are unmistakable, but which, to the tyro, either mean nothing or even escape his observation. It is not our business in this place to lay down laws which shall guide students, but we cannot refrain from calling attention to one broad principle, one, we may say, which underlies the whole subject of emergencies during anæsthetic narcosis. Were it followed out as it should be, fewer fatalities would occur, few emergencies arise, and so we may truly plead justification for

its introduction here. Let us formulate our first great principle thus, and say if it be true that "no man can do two things well at the same time," the saw is pre-eminently true of the would-be administrator of anæsthetics. The whole attention and plenty of it, must be given by you to the patient stretched before you, and remember that you personally have taken him from bodily vigour and sane sense to the condition of helpless relaxation and absolute mental obliquity, and by your hands must he be brought back to his normal state of *compos mentis* or pass the barbican 'twixt life and death, leaving you with a life-long query to settle within yourself—Could I help it? The possibility of such cases should, then, emphasise *the* principle and make the practice perfectly safe.

Nor must you allow mere perfunctory obedience to book instructions to usurp the all-important brain effort of attention. If you want to hear a supposed footfall in the still night do you not strain your ears until the rustle of leaf against leaf becomes a painful noise? So must be the attention paid by you to your patient. Not by eye alone or by the finger on the pulse can the impending danger be detected, and the necessary precautions against accident calmly yet swiftly be called to mind and methodically carried out. The eye, the ear, the sense of smell all assist, and each should to the expert tell its tale and convey its warning. The necessity of such constant attention lies in this, to save your patient you must learn, early and very early, that he is in danger, you must have time to arrange in your mind the best plan of action to be adopted in order to resuscitate him. You must judge how the plan, with the materials which happen to be at hand, will be best carried into execution. Hurry, in these cases, is fatal; on no occasion is it more rigidly necessary that the rule of *festina lente*—of being quick, slowly—should be adhered to in every particular. Bustle, clamour, above all, too many assistants, especially if self-constituted and wholly ignorant save of their own presumed mastery of the situation, not only do more harm than good, but actually increase largely the jeopardy into which your patient's life has been brought.

I.—EMERGENCIES WHICH MAY OCCUR DURING THE ADMINIS-

TRATION OF NITROUS OXIDE.—Several cases have been reported as deaths which were due to the administration of nitrous oxide gas. These accounts, however, cannot be accepted as furnishing sufficient evidence that death was really the result of the inhalation. It may be worth while analysing some of those best contested, and reading the lessons they teach.

One of the first cases was recorded in America.¹ The subject was a highly nervous patient whose mind was so vacillating that she refused the gas repeatedly, and finally was operated upon while imperfectly under its influence. Death following the performance of the operation was put down to syncope. Although the death of this unhappy lady was not due to inhalation of nitrous oxide, the narrative of it affords most valuable food for reflection. In the first place the highly neurotic people, and especially women, are those who run the greatest risk. In these persons shock acts with the most remarkable force. A pain, or an effort needing but little fortitude and easily under the control of the individual in average health, exerts a most deleterious influence upon the highly neurotic.

In such cases the duty of the anæsthetist is to *push* his anæsthetic, and to be most peremptory in refusing to permit any operative measures to be attempted until absolute unconsciousness has supervened.

Some five years later a death took place in Manchester, the details of which present a parallel which is striking.

The patient,² himself a medical man, was imperfectly anæsthetised, a subsequent attempt at anæsthetisation having been attempted, the extractions were effected. The patient died immediately the *second* stump was withdrawn. In this case, although there is no cause to suppose that the victim of the untoward accident was actually neurotic, yet his condition was really identical, for the incessant and severe pain to which he had been subject for some days had robbed him of sleep and imposed a heavy strain upon his nervous system. When the first attempt at extraction was

¹ Dental Cosmos, June 1872.

² See Brit. Med. Journ. vol., 1, 1877, p. 439, and p. 496 and p. 474.

made he became sufficiently conscious to complain of pain and to request more gas should be administered. The account also tells that the patient, fearing lest the dentist should again attempt extraction while he was still conscious, held the face-piece upon his own face. At the moment this mask fell, the patient would be imperfectly anæsthetised, so that the attempt to remove two difficult stumps would certainly be risky, since shock would be present and would in all likelihood jeopardize the patient's heart. In support of this view we glean the fact that the *post mortem* examination revealed the existence of a fatty and diseased heart. So that this patient, having his sense-functions heightened by a depressed nervous system and therefore likely to be very easily affected by shock, had also an enfeebled heart, or one peculiarly liable to syncope. In this case also another fact stands out pre-eminently, and that is that only two persons (the operator and the patient) were in the room at the time of the accident. Now, as we shall see later, valuable time was thus lost, the operator probably only noticing the condition of his patient after the completion of the work about which he was engaged. Mr. Clover, at that time administrator of anæsthetics at University College Hospital, wrote about this case in the following words: "Those who daily witness the continuance of the circulation in spite of the blood being black with the gas, and the speedy and cheerful recovery of the patient will conclude that so unusual a result (as a fatal accident) must have depended upon the peculiarity of the patient whose heart was found sufficiently diseased to account for death." In these lines Mr. Clover seems rather to have striven to vindicate the anæsthetic than to have critically determined the true cause of the fatality.

In the well-known case which occurred at Exeter, the patient a lady took gas, and died.³ In this case there does not appear to have been any particular trouble in giving the gas, nor was the patient such as to indicate the possible onset of dangerous symptoms. In the discussion which the sad inci-

³ See *Brit. Jour. Dent. Sci.*, 1873, and transactions of Odontological Society of Great Britain for same year.

dent gave rise to, it was suggested that a portion of the gag became chipped off and lodged in the wind-pipe.

Dr. Turnbull⁴ records a case when death occurred during the administration of nitrous oxide gas, which death he attributes solely to the impaction of a cork prop in the patient's larynx. Thus both the Exeter case and that of Dr. Turnbull were put down to suffocation from the introduction into the air passages of foreign bodies. In the former case a very important matter cropped up at the examination, but which appeared at the time to excite little attention. The patient was allowed to remain for some seconds or even minutes without artificial respiration being performed. The first few minutes in such cases being of vital moment were frittered away in seeking medical advice and assistance.

Mr. Andrew Clark⁵ records a case of death during the administration of nitrous oxide, which occurred it is alleged from syncope. Without entering further into the details of their cases, it will be well to mention that there have been others recorded which have been said to have arisen from syncope.

We will, having cast a preliminary glance over the reported cases of death, seek to learn from what other dangers patients under the influence of nitrous oxide should be guarded.

Bartholow⁶ speaks from his own experience, of various cases in which nervousness, vague mental sensations and headache have been experienced after the inhalations.

Coma⁷ of several days duration has been recorded, and I have myself seen a case in which the patient, a delicate lady of a highly neurotic temperament, indulged in a species of torpor, little removed from coma, and which persisted for nearly twelve hours.

Drs. Stillé and Maisch further record the supervention of hemiplegia and temporary catalepsy after nitrous oxide.

Under the heading of Hysteria, as we shall see come a

⁴ "Artificial Anæsthesia," 2nd. ed., Lewis, London.

⁵ *Brit. Journ. of Dental Science*, vol. xxvi.

⁶ *Therapeutics*, p. 508.

⁷ See National Dispensary Stillé and Maisch.

number of very important cases, which give rise to emergencies as alarming as they are difficult to manage.

Clover⁸ mentions cases of convulsions, syncope (not fatal) severe and lasting headache, nightmare, and draws attention to some cases in which the respiration slows, and afterwards ceases altogether.

In the case of epileptics, attacks of epileptiform convulsions have followed the induction of anæsthesia by nitrous oxide, while some writers record cases of choreiform seizures under similar conditions. Persons who are the subject of phthisis have incurred hæmoptysis after nitrous oxide.

In conclusion, further we must mention that large number of cases, when dangerous symptoms occur during or immediately after, nitrous oxide inhalation, and which are not directly due to that agent, but result from blood in the trachea et cœt.

Although we have before us a long list and a formidable one, of causes of emergency during the administration of nitrous oxide, yet we shall see that each and every case admits of pretty easy management if only its nature is appreciated early, and the line of treatment at once adopted.

Nor must we allow ourselves to think for a moment that nitrous oxide is a dangerous agent, it is *par excellence*—the *safe anæsthetic*—but it, like all useful things, wants to be well understood and properly handled.

To be Continued.

SOME APPLICATIONS OF ELECTROLYSIS IN DENTISTRY.*

By W. B. AMES, D.D.S., of Chicago.

A close study of the phenomena of the electric force and a varied application of it will give one an excellent adaption of means to ends. To supply one's-self with a galvanic or storage battery, and simply make use of it in exciting magnetism in one or two mechanical appliances is to ignore the most useful properties of this delicate force. The power of the galvanic current to decompose compound substances by its

* A Paper read before the Illinois State Dental Society,

⁸See "Ringer's Handbook of Therapeutics," xth, ed., Article Nitrous Oxide.

passage through them has been the foundation of many most useful discoveries, which have been variously applied in the arts during the last century. The chemical effects of statical electricity were first investigated by Drs. Priestly and Cavendish, in 1784. The decomposition of water, by passing through it a succession of discharges of statical electricity, was discovered in 1789 by several co-workers. The decomposition of water by the *galvanic current* was discovered and first described by Nicholson and Carlyle, in 1800. On November 20th, 1806, Sir Humphrey Davy presented to the Royal Society a lecture on some chemical agencies of electricity, and in the following year announced his discovery of the decomposition of the fixed alkalis. Faraday, who between 1831-40 published his remarkable series of scientific essays, entitled, "Experimental Resources in Electricity," was the first to define the laws which hold in this process, and, for the sake of precision, introduced a system of nomenclature which has since been generally employed. The process he called *electrolysis*, the terminal being derived from the Greek of *through* and *disengaging*. The poles where the electricity passes in and out of the body undergoing decomposition, he called the *electrodes*, meaning the ways. The surface from which the current enters the body is called the *anode*, "the upward way," and the surface from which the current leaves the body is called the *cathode*, "the downward way." The anode is continuous with the positive and the cathode with the negative pole of the battery. Compound substances that are directly decomposable by the galvanic current are called *electrolytes*. The elements of an electrolyte are called the *ions*. Those ions which appear at the anode are called *anions*. Those which appear at the cathode are called *cathions*. The anions and cathions of an electrolyte are the negative and positive elements, respectively.

Outside of the laws of Faraday, which can be demonstrated by careful experiments, there is very little positive information on the subject. From Faraday's time attempts have been made to classify, according to their chemical composition, the fluids capable of electrolytic decomposition, but without much success. As the resistance of a liquid increases the tests of

electrolytic conduction become less and less sensitive ; it is not then surprising that views on what constitutes an electrolyte have changed considerably.

Davy and the older chemists considered water to be the only electrolyte. Faraday, by decomposing the fused chlorides, dissipated these notions, but still regarded water as the body decomposed when acid solutions were subjected to the electric current. Until chemists were able to produce absolutely pure water it was considered to be a conductor ; but as the purity of the water is reached, the conduction decreases until it is nil. It has been estimated that one ten-thousandth of sulphuric acid is sufficient to render water a conductor. Miller supposed that an electrolyte must be a combination of a conductor and a non-conductor, and so the majority of electrolytes are ; but alloys, when fused, act as electrolytes to a certain extent, and Sn Cl_4 , tho' composed of a conductor and a non-conductor, is not an electrolyte. It would therefore appear that the condition does not depend so much upon the chemical composition of the body as on its molecular arrangement, and that the liability of the body to electrolytic decomposition is in proportion to its conduction and the complicity of its molecules, modified by their adhesion. Alloys, I consider, would be thoroughly decomposed by the galvanic current, were it not for the adhesion of their molecules. The dilution of acids increases their conduction, apparently, by attenuating the *internal attraction* of their molecules. To this points the fact that H_2O and H Cl , two non-conductors, when mixed form a very good conductor, the best of the liquids. Of all electrical phenomena electrolysis appears most likely to furnish us with a real insight into the true nature of the electric current, because we find currents of ordinary matter and currents of electricity forming essential parts of the same phenomena. Before entering on the uses, I consider it advisable to give some of the laws and recognized theories on this process.

The fundamental law of electrolysis, established by Faraday and confirmed by the experiments of Beetz, Hittorf and others, down to the present time, is as follows : *The number of electro-chemical equivalents of an electrolyte, which are de-*

composed by the passage of an electric current in a given time, is equal to the number of units of electricity which are transmitted through it. Also, that bodies are decomposed in exactly the same proportion in which they combine. The electro-chemical equivalent of a substance is that quantity of a substance which is decomposed by the passage of a unit of electricity. Every electrolyte consists of two or more components, which, during the electrolysis, appear where the current enters and leaves the electrolyte, and nowhere else. The actual transfer of the ions through the electrolyte, in opposite directions, is part of the phenomenon of the conduction of an electric current through an electrolyte. At every part of the electrolyte through which an electric current is passing there are two opposite material currents of the anions and cations, which have the same lines of flow as the electric current, and are proportional to it in magnitude. The opposite motion of the ions through the electrolyte would be a complete representation of the electric current. We may compare this motion of ions to the motions of gases and liquids through each other during diffusion, there being this difference between the two processes, that, in diffusion, the different substances are only mixed together and the mixture is not homogeneous, whereas, in electrolysis they are chemically united and the electrolyte is homogeneous. According to Classius, the decomposition and recombination of the molecules of an electrolyte is continually going on, even when there is no current, and the feeblest electro-motive force is sufficient to give the process a certain degree of direction. In no case, in the body of an electrolyte, is there any decomposition observable; in no case is any gas there liberated. The ions are set free by the electrodes, and there alone. As the ions arrive at the electrodes they are forced into company with atoms of their own kind with which they cannot combine. This forms an opposing electro-motive force, which produces a reversed current when other electro-motive forces are removed. When this reversed electro-motive force, owing to the accumulation of the ions at the electrodes, is observed the electrodes are said to be polarized.

One of the best methods of determining whether a body is

an electrolyte or not, is to place it between platinum electrodes and pass an electric current through it for some time, and then, disengaging the electrodes from the galvanic battery, connect them with a galvanometer and observe whether a reverse current, due to the polarization of the electrodes, passes through the galvanometer. Such a current being due to the accumulation of different substances at the electrodes is a proof that the compound has been electrolytically decomposed by the original current from the battery. It is upon this principal that the Faure accumulator and all modifications of it, the numerous storage batteries recently invented, depend for their results. These storage batteries will prove of great benefit to those who are convenient to a dynamo machine, as at a slight cost, and without any inconvenience, they can procure and keep stored up a quantity of power sufficient for any purpose.

The processes of electrotyping and electroplating, depending on electrolysis, can be made to serve the dentist for a variety of purposes. A very good system for the construction of celluloid dentures is with casts, consisting of a shell of copper representing the mouth, exact or modified, mounted upon hard plaster. This shell can be deposited upon a modeling compound impression of the mouth or of a cast by attaching it to a copper wire, coating the surface of impression and ends of wire with finely divided carbon, attaching to the negative pole of a battery and immersing in a saturated solution of sulphate of copper containing one-twentieth of sulphuric acid, and a copper plate connected with the positive pole of the battery. The battery for this purpose should be of considerable power, and the work should remain in the solution from three to five hours.

I also find it very convenient to have at hand the necessary apparatus for electroplating with gold, for there is often a crown made of platinum and gold which, in finishing, has spots of platinum exposed and which, on account of being at prominent angles, is difficult to cover by the blow-pipe. Such a crown can be filled with wax attached to the negative pole from the battery by a platinum or gold wire immersed in a cyanide of gold solution, and receive a heavy coating of

pure gold by passing the battery current to it from a pure gold anode. Then there are mouths in which an 18 carat gold partial-plate will become discolored to an objectional extent. As we need this quality for partial-plates, our only remedy is to electroplate the surface with pure gold ; also, the ends of clasps which are conspicuous can be made to more closely resemble gold fillings by electroplating them with pure gold.

A very efficient apparatus for pickling such work during construction is an electrolytic cell, in which dilute sulphuric acid is decomposed between an anode, consisting of the gold plate and a cathode of platinum. This is very convenient when once arranged, saving the heating of the pickle each time it is needed.

The electrolytic is generally much simpler than the chemical process of decomposing compound bodies, and especially is this the case when we wish to carry on the decomposition within the oral cavity. In the bleaching of discolored teeth any strictly chemical process that we may safely use is necessarily tedious, from the nature of surroundings ; and most processes are far from satisfactory.

For a few months past I have been making use of the decoloring properties of nascent oxygen, obtained by the electrolyzation within the cavity of the tooth of acidulated water or a solution of chloride of sodium. In my first efforts in this direction I used the solution of chloride of sodium, as in any attempt at bleaching, chlorine naturally suggests itself as the agent for results ; but inasmuch as the chlorine is inert except in the presence of moisture, only acting as a dehydrating agent, I think that as good results can be obtained by decomposing the acidulated water, thereby obtaining nascent oxygen or ozone. This, of course, we should be loth to use, unless the acid be the aromatized variety, which, as has been demonstrated has no action on the tooth structures. Then there are circumstances which counter-indicate the use of the *chlorine compound*, such as the immediate proximity of a gold filling in a vital tooth. Nascent chlorine will cause instant and severe pain in a vital tooth, containing a gold filling, with which it comes in con-

tact ; therefore, in the presence of such gold filling, the water slightly acidulated, should be used. The paraphernalia for this process consists of two platinum electrolytic needles attached to handles which are in connection with the poles of a galvanic battery ; after applying the dam, filling the apex of the root, and flooding the cavity with the fluid to be decomposed, the point of the cathode should be placed at an out-of-the-way edge of the cavity, and the anode passed into it and over the walls, starting at a point furthest from the cathode, and by gradually approaching it thoroughly decompose the liquid. This can be repeated several times, if necessary. If a solution of chloride of sodium is used the chlorine and oxygen will be set free at the anode, and hydrogen and sodium at the cathode. If acidulated water is used the oxygen appears at the anode and hydrogen at the cathode, the acid, by recombination remaining in the liquid.

In peroxide of hydrogen we have a bleaching compound of considerable efficiency. It has a decided action on organized colouring matters, as is demonstrated by its effect in the bleaching of human hair ; it being the active principal of preparation for that purpose. Peroxide of hydrogen is not always available and is rather prodigal of its virtues, so to be able to manufacture it or its equivalent as needed would help us out on many occasions.

Mr. Schonbein, who, in 1840, first called formal attention to ozone, first observed that it appears at the anode in the electrolyzation of water. It has been estimated that one volume of ozone will purify over 3,000,000 volumes of putrid air. Thus it will be seen, that by evolving nascent oxygen or ozone within the substance of any putrid mass we must effect a very thorough disinfection of it. This, I have been able to accomplish within the pulp-cavity of devitalized teeth containing putrid pulps, with the most satisfactory results. A sponge or flannel covered cathode, moistened with salt water, should be placed upon the lip or cheek over the point of the root to be operated in, and a fine platinum anode introduced into the pulp-canal. This electrode should be slender and finely pointed, so as to be easily but gradually passed to the apex or nearly so. There will soon be observed a frothing

of the contents of the cavity, after which the contents may be removed with impunity. The passage of the current will be found to be almost painless, if the anode is first introduced and then the sponge cathode brought gradually into contact. If both hands of the operator are needed in managing the anode and the lips, mirror or what-not, he should have an assistant to apply the cathode at the proper time.

There are some subjects who are very susceptible to the galvanic current, so that considerable care is necessary in ascertaining the strength of current to be used. Sometimes one Buncen cell will give as powerful a current as can be borne, but in most cases the force can be taken from three or four cells.

By this method of disinfection I have been able to proceed with the removal of decomposed pulps without any bad results, where I should have expected trouble from pursuing any other course of rapid treatment.

In electro-therapeutics, or surgery, the term *electrolysis* is practically restricted to the electrolytic decomposition of morbid growths, or parts affected by chronic inflammation, by means of some form of needle electrodes. Although more or less electrolytic action takes place in all applications of the galvanic current, externally or internally, yet the term, when applied to any electro-surgical operation, is understood to imply that electrolytic action was the leading effect sought for, and that it was obtained by needles, or by some form of metallic electrodes, more or less pointed at the extremity.

Having had no experience in this line, to make the paper more complete I will quote briefly from Dr. Rockwell: He says "that when needle electrodes, connected with the poles of a galvanic battery, are inserted into a tumor a three-fold action is produced: *First*—Decomposition of its fluid constituents. Hydrogen and the alkalies, soda, potassa, etc., go to the negative, and oxygen and the acids to the positive pole. As the body is mostly composed of water, holding salts of soda, potash, etc., in solution, it is a good electrolyte and, in most conditions of disease, undergoes rapid decomposition. Scirrhus and fibroids, when hard and firm, require considerable strength of current, and are electrolyzed with con-

siderable slowness. Erectile tumors, which are almost entirely of fluid composition, can be electrolyzed very rapidly. *Second*—Absorption. Absorption may be hastened both by the chemical changes that take place, the mechanically irritating effects of the needles, and by the transference of the anions and cations. This absorption takes place, both during and after treatment. In some cases it is not at all observed during the operation, but goes on slowly for weeks following. *Third*—Disintegration and atrophy. As a result of decomposition and absorption, and associated with them, the tissues become dried, separated and shriveled, and the tumor decreases in bulk and may entirely disappear. Shortly after the needle is inserted the growth will be seen to change color, the skin soon begins to shrivel and contract like an apple when it is baking.”

PRACTICAL METHODS IN PRACTICE.*

By ALTON HOWARD THOMPSON, D.D.S., Topeka, Kansas.

At the last annual meeting of this association the writer had the honour of presenting a paper upon “Scientific Methods in Practice,” in which he endeavoured to describe the process of the development of the scientific method from crude empiricism ; and tried to show also that we were not yet freed from the trammels of the empirical practice, and were, indeed, very far from the perfect application of scientific methods in practice. The latter includes deduction and comparison, supplemental to and necessarily founded on experiment. But it was shown also that our art, while yet empirical, had far outstripped our science in the race for perfection, and that the need of the age was fresh science,—new facts,—whereon our art and our practice could feed and grow ; and that, if no new science was furnished it, our art was bound to retrograde and decay.

The present paper is intended to supplement that former one, by endeavouring to show the reach and limits of *practical* methods in practice.

* Abstract of a paper read before the Missouri State Dental Association, at Sweet Springs, Mo., 1885.

It is needless to insist that the scientific method is the practical one ; that the educated operator *knows*—to the limits of present professional culture—the characteristics of disease, the alterations necessary to be produced in the features of a disease to effect a cure, and the means of doing this. *He* does not experiment, first with one thing and then with another, till he finds something to help the patient, like the ignorant empiric, but, knowing the right thing to do at once, he does it. It is pre-eminently practical as well as scientific to know what to do without delay. It is simple science to *know*,—i.e., to *know* a disease when we meet it ; to *know* what to do to *cure* it ; to *know* what to employ to effect this cure, and to *know how* to apply the remedy,—and really nothing is more practical than this varied knowledge. Therefore, the educated, the cultured, the skillful man, is he who knows the science *plus* the art of his calling, and is fitted for its practice above the *uneducated*.

It too often happens in our day that operative and artistic ability and skill are not combined with scientific attainments and culture in the same individual. The finest operators are often very poorly informed upon scientific matters, and the scientific man is too often a poor operator and practitioner. It is too much to say, perhaps, that scientific attainments and operative ability are rarely combined. Too many investigators push their science to the extreme of subordinating practical things. There is a growing disposition to separation between science and practice. This tendency must be checked. Partial culture means total failure, and only the fully rounded man, he whose head and hand are both well trained, can succeed and sustain professional excellence and standing. There is a wide-spread belief that the scientific man is necessarily impractical *because* scientific ; that science *per se* does not declare dividends, and that it and its devotees are therefore practically useless. The scientist must be honoured. Science is to art as food to work. It is the purveyor of knowledge, upon which serviceable skill is founded, and by furnishing working knowledge renders skill possible. And this may be said with greater force in behalf of practical methods and the practical man. His is the all-important field of the utilization

and application of science in the work of tooth-saving. His is the duty of employing the knowledge of diseases, and the methods, remedies, operations and materials for the cure of disease, which science lays before him. He is the "middle-man" between science and its service of humanity. Nor must the scientist usurp the place of the practical man. But the practical man has the advantage, in that his department is stronger, is further developed and better equipped, than that of the scientific man. His work is further advanced in all the elements of progress, and has attained a place far in the van of the march of science. His methods, which have been so successful in practice, have been attained by process of empiricism, it is true, but by a course of tireless, intelligent experiment, which challenges the admiration of the intelligent world. He has fully employed all that science has provided him with in the way of knowledge, and then launched boldly out into the unknown sea of baseless experiment, and accomplished successes in the treatment of disease and the salvation of teeth that are simply marvellous. He has sought only for effect, no matter where or by what attained. The practical method with him is that which succeeds, for with him "nothing succeeds like success." Success with him means honour to his profession, as well as support to himself, through the possibilities of tooth-saving, or restoration. So he has worked and experimented until mountains of difficulties have melted away and unlimited success is his.

In the treatment of the one disease of dental caries, for instance, how little is known of the real nature of the disease, and yet how successful has been the treatment of that disease by practical methods, attained through generations of experimenting, industriously and intelligently prosecuted. He is progressing upward and onward in the attainment of still greater victories in the work of tooth-saving. Practical methods have so far outstripped her. But once the pathology of caries is thoroughly comprehended,—and we are undoubtedly making giant strides in that direction,—practical treatment will advance to possibilities not now dreamed of. We are now most in need of positive knowledge of the pathology of diseases with which we have to deal. Take that

other disease, *pyorrhœa alveolaris*, how less than nothing we know of its real nature, and yet on the practical side, by tireless experiment, we are attaining successful methods of treating it. But of the nature of the disease, or why our methods should be successful, we know nothing. If our science were equal to the demands of the day, we would know the disease, the alterations in its features necessary to approach its elimination, and the means of attaining this much-desired end. The rest would be simple. He will find the remedy, because he *must* meet the demand made upon him for its cure. The chances are largely in his favour that he will, in this case also, take the laurels from the scientific man, as he did in the treatment of caries.

Of late years wars have been waged, and science and practice have alike been outraged, in the interest of revolutions tending to the overthrow of established modes of practice. Out of one of these controversies it comes to pass that the lion, gold, and the lamb, amalgam, dwell together in peace and harmony in the practice of nearly all operators in this country to-day. The fight was long and bitter, but it did not banish either material from the field. On the contrary, it taught the profession more of the science of caries and of the two materials than it ever knew before, and led to a more extensive use of *all* filling materials. All honest, capable practitioners use gold, amalgam, cement, gutta-percha with proper discrimination and better success in tooth-saving now-a-days because of the educational effect upon them of the New-Department controversy. More teeth are being preserved in this country to-day because of the study and thought that discussion provoked. More teeth are filled to-day with gold than ever before, and that in the face of the wide-spread use of the plastics. Gold still holds its place, and is indeed gaining its proportion upon the plastics. And finer fillings are the rule now amongst the rank and file, who have a praiseworthy ambition to emulate the examples of the masters. Its usefulness is extending, also, and more difficult cavities are being brought under its rule, by the improvement in the preparations and instruments furnished us, and progress in the methods of working gold. It has not been

injured by the plastic agitation, but, on the contrary, has been benefited. The ordinary practitioner was led by the plastic advocates to attempt to fill teeth he before extracted, and with such gratifying results as to encourage him to attempt better things in gold. He does this and succeeds, and step by step progresses in his employment of gold until he develops a creditable ability. He then becomes ambitious, seeks instruction, and progresses onward in the right path. In this improvement in the rank and file—and it is more general than is supposed—there is an advance forward of the body of the dental profession in this country. The mediocre operator finds that his methods are similar to those of the best men, and eagerly seeks to learn more, that he may do better. This is a good sign, and promises much for the advancement of artistic operating with the mass. It therefore becomes those who are recognised as representative operators not to be weary of teaching and preaching artistic skill, for their labours are literally bearing golden fruits. The mass are anxious and willing to be lifted up to a higher plane of artistic ability. They care little or nothing for the science of the profession, but are desirous of improving their methods and doing finer things in practice. And it does not so much matter that they ignore science, for the scientific men must be made of the students who enter our ranks—the plastic material which must be educated and trained almost from the cradle for the work of investigation. We do not ask the practical man to do this, for he is unfit as well as disinclined, and will be useful in other ways.

The plastics are also in more extensive use and are saving more teeth than ever before, because more teeth are filled with them, and the powers of tooth-saving are being extended in all directions. But the places of the plastic materials are becoming more strictly defined as their preserving qualities are becoming better understood by experiment and experience. An undefined, almost unconscious, strictness of discrimination is prevailing and increasing amongst all classes of operators in the selection of filling materials. This indicates study and close observation, and means unmistakable advance. The offices of amalgam, of gutta-percha, and the

cements, in their varieties, are being hedged about and more closely controlled and studied, that their reliable saving qualities may be better defined. As the qualities are improved or increased, further restriction in the directions of gold encroachment also follows.

The plastics are being encroached upon in every direction by the tyrant and king of filling materials. The practitioner extends the area of his teeth-saving powers with the plastics as a sort of pioneer reaching out into the wilderness of unsaved teeth, and as he succeeds he follows up his victories by the plastics with gold, so that, as the plastics redeem from the wilderness, gold gains upon the plastics. So, by the very success of the plastics the sphere and capabilities of the noble metal is widening. All ambitious men have a laudable desire to extend their gold operations, gradually abandoning the plastics as they can employ gold, and thus developing higher ability and making the plastics serve a talkative purpose. So the sphere of the plastics is being contracted and that of gold extended more and more. By the plastics new fields are won, and gold follows the pioneer to improve and develop these fields.

In regard to other departments of practice, we may say that in some we are gaining rapidly, in others standing still, and in still others are retrograding and losing ground. For instance, experimentation with all sorts of scientific and unscientific remedies and operations for the treatment of *Pyorrhœa alveolaris* is just now the fashionable thing, and the amount of pain that will be inflicted upon suffering humanity in the experiments on this disease in the next few years is something appalling! But science and practice must advance, and humanity must furnish the clinic material; so we will march onward. In this disease we are advancing at railroad speed. In regard to caries, we are in its treatment making some progress toward preserving more teeth, and that curiously enough, because of the development of materials and a better knowledge of their capabilities than for any other reason. In the preservation of dead teeth and the treatment of alveolar abscesses we have gained practically nothing in ten years. In prosthesis we had fallen behind

deplorably until five years since, when there was a reaction, and there is now perceptible improvement and advance in the art of restoration. In attaching crowns there has been remarkable development within a few years ; and it, too, is now a reigning fashion. In its kindred bridge-work there is great activity, and beautiful things are produced which await the verdict of experience. It, too, is a great fashion. But those things which are of such rapid growth are apt to suffer reaction which does them much undeserved injury. Operations of all kinds should be cautiously performed, and the development of new features should be watched with interest before hasty adoption. Caution is advised against "fancy operations," over ambition and undue confidence viz., personal manipulative dexterity.

REFLEX PAIN.*

By KATE CAMERON MOODY, D.D.S., Mendota, Ill.

After having nearly completed this paper I learned that Dr. Newkirk had presented something in the same line of thought a few years ago before the Society ; but as it is a subject of a great deal of importance to us all, and upon which very little has been said, it seemed that a change of topic was not best.

When first entering upon active duties in my profession this was one of the most formidable mysteries I had to encounter ; the complex nature of which was only equaled by my disappointment at finding so little, in all our literature to give me light.

The common use of the word "reflex," as we all know, is the name given to that influence which, when exerted upon the periphery, or terminal branches of a nerve, is conveyed to the centre by an afferent, or sensory fibre, to be "reflected" by an efferent or motor fibre ; the reflex impulse being one of *motion*, and not of *sensation*. An example : We take hold of a hot iron ; the impulse conveyed to the centre gives a sensation pain ; the centre immediately sends out an impulse through the motor fibres which causes the muscles to

* A paper read before the Illinois State Dental Society.

contract, and we drop the iron. This is "reflex" action, pure and simple. But there is another application of the word which is quite commonly made, and which is employed here, namely, the designation of perverted nervous function, which occurs simultaneously with phenomena produced by other than peripheral irritation—the difference being that the reflected impulse is one of sensation instead of motion, also called sometimes *sympathetic* pain; though it has been doubted by good authority whether the sympathetic system is capable of transmitting such influences.

There are three great centres of reflex action—the brain and cord, the stomach and digestive apparatus, and the reproductive system. When any one of these centres is disturbed the influence is likely to radiate in any and all directions. In this way disease may arise in portions of the body quite distant from the true seat of irritation; hence the difficulty in diagnosis when judging from the locality of the symptoms. If there be over-excitement or worry of the mental faculties, it does not necessarily follow that the *head* will be the first to cry out in pain; there may be disturbance of the *stomach* instead, or, if the digestive organs become disarranged, the head may be the first to give notice. Thus it is that, in attempting to cure disease by removing the cause, we sometimes find ourselves in deep water.

We have always been taught to define pain as "an impingement upon a nerve." Let us consider it in the abstract. Physiologically, what is it? or, shall we say *pathologically*? for there can be no such thing, of course, as physiological pain. What is that condition of the nervous system which our consciousness interprets as "pain?" Is it, as some claim, only an excess of ordinary sensory function? The function of any organ or tissue is the work it does when in a healthy condition. The work of the nerve is to convey impulses to and from the centre; then, if some other than normal work is done by a nerve, we conclude that something is wrong, some change *somewhere* causing this perverted function.

It is within the delicate mysterious chambers of the brain

where resides this hard-to-be defined influence or sensation we call "pain." It is here the change from afferent to efferent impulses takes place. When, therefore, pain is felt in a part, as the result of reflex influence of some remote diseased part, may not the fault lie in the *centre*, which fails to transmit correctly? thus making the secret of reflex pain a *psychological* and not a *pathological* one. How, otherwise, explain the instantaneous relief from reflected pain on the removal of the real cause? Can there be real molecular changes existing which would cease immediately, without time for the usual repair of tissue necessary to complete absence of pain? Tuke, in his "Influence of the Mind upon the Body," says: "Emotional impulses may act upon the sensory ganglia and nuclei of the nerves of sensation so as to produce any of those sensations which are ordinarily induced by impressions upon their periphery; such sensations, although central, being referred by the mind to the peripheral terminations of the nerves."

To return to the work performed by the nerves. In what does this change of function consist? The cutaneous nerves convey to the centre a sense of comfort when the surrounding atmosphere is neither too hot nor too cold; but let these same nerves be exposed to a cold wind, and quite a different sensation is produced, which causes the reflex movements of shivering, or, if long continued, of aching pain. In the same way intense heat, when applied to the surface will cause pain. Now both heat and cold produce an agreeable sensation when applied in a certain degree to the surface, but an entirely different sensation when the degree is increased. So we see that if a force which produces an agreeable sensation be increased to a certain extent, the result is a sensation of pain. Then does it not seem that the difference between comfort and pain is one of intensity only, *quicken*ed impulses, just as the difference in wave lengths of light will produce different colours; or may not the different results produced by nervous impulses be due merely to a difference in wave lengths of the impulse—or, in other words, only a "mode of motion?" A nerve, like a faithful messenger, is going

about its daily duties, performing its normal functions—an impingement occurs—*it merely hurries up to tell the news!*

It is not necessary that any tissue of the body should be putting forth its greatest effort when producing normal results. Nature has provided, in various ways, against accident and disease in our bodies. A blood vessel is not distended to its utmost when simply carrying the blood at a normal rate; the large sinuses of the brain provide against an engorgement or obstruction in that important part; the heart possesses a capacity which permits great acceleration of motion in case of excitement; the lungs, likewise. A man may walk three miles in a leisurely way and feel refreshed, but if he put forth extra effort, and walk five miles in the same length of time, he will become fatigued, although he use the same muscles for the work. But what of the nature of this force? Who shall say? Will scientists finally solve the question?

In a recent scientific journal the similarity between nerve force and electrical force is discussed, and their identity well nigh proven, or, at least, nearly enough so to make the theory seem a very plausible one.* This, in connection with the late experiments of Prof. Hughes of England, by which he has shown all matter to possess an inherent property, manifested to us, under certain conditions, in the phenomena of magnetism and electricity, makes a strong argument in assuming this nerve force to be but another manifestation of this same mysterious property common to all matter.

It is through the vast net work of nervous structure, interwoven, crossing, recrossing and uniting, like lines of telegraph, in every part of the body, that these impulses are constantly being conveyed; their connections and relations being so intimate that one portion of the body cannot suffer alone but a deep sympathy is found to exist in the surrounding parts, and if the injury be great the whole body is involved. Whether these impulses are conveyed entirely by the sympathetic system of nerves, or whether through the continuity of fibres at the origin of the main nerves, is a question. It is a fact that the fibres of some of the mai

* Scientific American, May 3rd. 1884.

nerves may be traced to the same point in the medulla, either in their deep or superficial origin. Anstie speaks of the close juxta-position and intimate reflex relation existing between the roots of the fifth, in extracting, exert a powerful stimulating effect upon the pneumogastric. Why may not the pain in the stomach and œsophagus, "the lump in the throat" of hysterical patients after an operation be due to the same cause? Irritation of the fifth has been known to cause violent fits of vomiting and cardiac pains, as in the eruption of the third molar.

Of all nerves in the body the fifth cranial is the most interesting to us, as dentists, not merely because its branches supply the dental organs, but because it is most often the seat of neuralgic affections, with the exception perhaps of the sciatic, and when thus affected, yields less readily to treatment than any other nerve. Also, owing to its large and most exposed peripheral expanse, the complex nature of its functions and its close connection with other important nerves, its affections are most likely to cause secondary or "reflex" disturbance of wide extent. Without taking this into consideration, it would seem strange that cervico-brachial neuralgia, or disturbance of digestion, should be caused by carious teeth. Yet not only these, but parts more distant will often become thus affected. There seems to be an especially close relation existing between the teeth and the reproductive organs, and at times, when the latter are peculiarly engaged, it is not an uncommon occurrence for us to be called upon to treat perfectly sound teeth, though of course more often unsound ones. Again the careless, or shall we say *ignorant*, practitioner, will sometimes remove a sound tooth without relief to the patient, when the true cause of the trouble may lie no further away than the opposite side of the mouth. Simply because a person, almost insane with pain, demands treatment of a certain tooth, is no reason why a cool-headed dentist should not make a thorough examination of not only all the teeth, but, by using his knowledge of nervous distribution, inquire into the general systemic condition. We do not wish to be understood as asserting that such an examination and inq

will invariably bring to light the lurking cause, but that the removal of an obscure cause does, very frequently, produce the desired effect, is sufficient reason for the exercising of more care, yes, *more knowledge* than is sometimes used.

I am aware that the temptation is sometimes strong to use our skill only so far as we are compensated therefor; and yet, is it the highest aim of our profession to accumulate wealth? Is there not a more noble object to be gained, namely, the alleviation of suffering, as well as the more selfish one of self-improvement, in adding to our knowledge of the delicate structures under our care? We cannot be too well informed on these things; besides, it behoves us, as specialists, to not only post ourselves on what others have found out by experiment and investigation, but also to experiment and investigate for ourselves. Let us not leave it to the medical profession to prepare our food for us, being content with opening our mouths to swallow the bolus when ready.

An eminent medical authority, in his review of the state of ophthalmology for the year 1883, says: "The influence of carious teeth in producing affections of the eye is neither sufficiently considered nor understood. The relation between the two is often very noticeable."* Do not we, as dentists, share this implied reproach upon the medical profession? We are willing enough to confess our ignorance; but this is not sufficient. Let us "*observe, compare, reflect, record.*" There is ample room for research upon this one subject of "reflex pain." As I said before, the meagreness of our literature upon this subject, to one in search of facts, is very striking. It cannot be that there are not frequently occurring, in our many dental offices, such incidents, which, if recorded, with the results of proper research, would help many another, who may be puzzling over the strange occurrences which baffle all his skill. Let us honestly and faithfully record the results of our research—not being too fearful of criticism—and thus help to diffuse the knowledge we all need. If you have a patient with an inflamed and painful eye, which has refused to be comforted by all other treatment, but is immediately relieved after the treatment of a carious tooth, don't keep

* Report on Ophthalmology. S. J. Jones, A.M., M.D. Chicago, 1883.

the good news to yourself, but "call your neighbours in," and divide; after first satisfying yourself as to the probable reason of this sympathetic action between the different branches of the nerve, whether it be due to want of tone of the system, or to whatever exciting or predisposing cause, make a short and concise note of it, and send it to one of your journals, which will gladly assist you in your efforts to do good by publishing it.

Reflections from the Surgery.

A CASE OF CLEFT OF THE HARD AND SOFT PALATE SUCCESSFULLY TREATED BY OPERATION,
Under the care of F. BOWREMAN JESSETT, F.R.C.S.,
Surgeon to the Cancer Hospital, Brompton.

W.W., ætat 21, a strong, healthy young man, was admitted under my care, suffering from Cleft Palate. He complained a good deal of inconvenience in swallowing his food, which was continually returning through his nostrils. His speech also was so much affected that he had great difficulty in making himself understood. He was most anxious to have something done to remedy these defects, and came up from the country with the view of having an obturator or something fitted into the opening caused by the fissure.

On examination both hard and soft palate were seen to be cleft, the opening extending from just behind the gum in front, to the uvula behind. The soft palate was excessively sensitive, the least touch causing the levatores palati to act strongly, when the whole soft parts were retracted, then, apparently, forming a part of the walls of the Pharynx.

Considering the station of life the man was in, viz., a farm labourer, it was considered advisable to attempt a radical cure of the deformity rather than fit an obturator. I therefore advised him to allow me to operate upon him, at the same time pointing out that I could not promise that the operation would be successful. The patient, after a few days consideration, consented to have the operation performed, and on July 24, the patient having been placed in the recumbent position, and ether given, I introduced Smith's gag into his mouth, and by this means got a good view of the fissure. I then

made a deep incision, about half-an-inch, on the left side of the cleft in the hard palate; the bleeding from this incision was so free that I deemed it desirable to alter my proceedings. I, therefore, with an Archimedian drill made two holes through the bone in the hard palate, on either side of the fissure, and passed silver wire sutures through them, bringing the ends out of the mouth to be held by an assistant. I then introduced three other silver wire sutures about a quarter-of-an-inch on each side of the soft palate, the last being just at the base of the uvula. I had very little difficulty in passing them by means of an ordinary curved needle, passing it through, armed with the silver wire on one side of the fissure, unthreading the needle and withdrawing it, then passing the needle through the other side armed with strong silk, hooking the wire through the loop in the silk and drawing it through the opposite side of the palate. Having passed all the sutures I wished, I next proceeded to freely pare the edges of the fissure from above downwards, steadying each half by seizing the lower end of the uvula, and putting the parts on the stretch, cutting first on one side and then on the other. The next proceeding was splitting the bone of the hard palate longitudinally, on either side of the fissure, and prizing the two edges together, which was done by means of a sharp chisel and mallet, there was very free bleeding at this stage of the operation, which was readily stopped by plugging the opening with strips of lint. The edges of the cleft were then brought together by means of the wire sutures already introduced, being threaded with shot which were passed up close to the palate and clamped, the wire then being cut off close to the shot so that no sharp edges should be left to irritate the tongue. The last step of the operation was to pass Pollock's narrow bladed knife through the soft portion of the palate to the inner side of the hamular process on either side, and dividing the muscular fibres of the levator and tensor palati muscles. The patient's mouth was then sponged carefully and the gag removed. He was taken to his bed, and ordered to be fed entirely by means of a gum elastic catheter being passed into his œsophagus, to which was attached a funnel through which beef tea, milk, etc., were passed.

The patient made an uninterrupted recovery. On August 1st the wound was looking very healthy, and one suture was removed.

Aug. 4th. The plugs of lint were taken out of the opening made by the splitting of the bone in the hard palate.

Aug. 7th. Thirteen days after the operation two sutures were removed, leaving one suture in the back of the hard palate, and the first suture in the soft palate.

Aug. 10th. The remaining sutures were taken out sixteen days after the operation, and the whole fissure was seen to be firmly united. He is still fed with the tube.

Aug. 12th. He was allowed to feed himself with slops. beef tea, and bread and milk he swallows very well.

Aug. 15th. The two openings made by the chisel are nearly closed.

Aug. 18th. There is no trace of any opening. The patient feeds in the ordinary way, and his speech is very much improved.

REMARKS.

The method I adopted in this case for closing the fissure in the hard palate was that suggested by Sir W. Fergusson, but it will be observed I did not follow the different steps of the operation in the same order as he adopted. My reason for not doing so was that, as will have been observed, in dividing the bone and tissues at the roof of the mouth free hæmorrhage took place. This by trickling down the throat causes often a good deal of coughing which makes the passing of the suture through the palate a far more difficult proceeding, besides the mouth being filled with blood the parts are not nearly so distinctly seen and constant sponging is necessary, whereas, if the surgeon adopt the plan I did of passing all the sutures first, having the ends held out of the mouth by an assistant, he will find it comparatively easy to do so, he can see that they are opposite to each other and then by traction he is enabled to pull the whole soft palate considerably more forward and thus make the second step, that of paring the edges of the fissure much more easy. These two most important steps of the operation being accomplished the remainder are very quickly and easily done.

British Journal of Dental Science.

LONDON, SEPTEMBER 1, 1885.

DENTISTRY AND THE INTERNATIONAL CONGRESS, OF 1887.

Our readers will readily recall to mind the Congress of 1881, and the sparkling success which it achieved. On all hands it was acknowledged as being representative of Medicine and Surgery: the sections were so arranged and ordered that the various departments into which those two practical sciences are split up, were, in every case, personated by men respected in the circles of their own specialty, and none the less highly thought of outside that pale. The very real success of such a Congress, we imagine, could hardly fail to show that the lines upon which the committee worked in that instance were the best suited to promote a like success for any future Congress. Even if national peculiarity and topographic exigences should have needed minor departures, yet, the bold outlines of action would, we maintain, be adhered to with advantage. It seems also that the Congress of Copenhagen owed, in no small measure, its popularity to the fact that it was arranged and carried out on the same basis as its predecessor. The Americans have, however, thought proper to change all this, and, while striving to quash the proceedings of the original committee in attempting to supersede them by a self-elected and really unrepresentative committee, they have mutilated the first rough cast of the programme, and omitted altogether some sections before represented. Thus oral surgery and dentistry are left out in the cold. The science and art of dental surgery, so we are informed, are not and never have been a part of medicine. This statement since it sees the light in a contemporary which in a way is associated with the revolutionary committee, cannot be passed over. It savours of special pleading, and, like special pleading in general, is scarcely worth the paper upon which it is written. Among a few wiseacres who, like "my Lady" in Tom Hood's "Up the Rhine," insisted upon sitting in her own carriage when aboard ship, it may be considered good breeding to decry dentistry

and dentists, but the bulk of the medical profession know too well what they owe to dentists to attempt to look at them askant. The mere fact that graduates of the Universities and Fellows and Members of the College of Surgeons practicedental surgery vindicates its right to recognition among medical specialties. These said wiseacres may fling out "scathing nothings" as much as they please. It is easy enough to point to this or that quack and say: oh, he is a dentist! but can we not return the compliment, and bring a like "railing charge" against the other specialties, and even pure medicine? However, far be such an approach to the *argumentum ad hominem* from us. We hold that least of all ought the Americans to attempt to exclude dentists from their Congress, because not only are many of the craft in America well known as eminent men and scientists, but because medicine in America lends itself to very slight particularity in fixing its limits. In England we call eclectics by other names, and yet we recognize among the dentists men whose names the medical profession is proud to claim as belonging to brethren in one camp, having one single and earnest aim,—the healing art. The omission of a section devoted to oral surgery will not only damage the dentists, but will add one more to the jarring forces of discord already at work, and will injure the success of the whole undertaking. We are even now very doubtful whether the Congress will be an accredited one, the total abstention from its proceedings of the leading medical and surgical luminaries will and must render its position if not untenable, at least precarious. So, unless further means can be arrived at for patching up the existing breach, it would appear more than likely that the Congress will become a fiasco. If wiser counsels prevail we cannot doubt that with the establishment of the Congress and its committee on a sound basis, we shall see the resumption of a section devoted to oral surgery and dentistry.

IN ANTICIPATION.

We have reached September and in next issue we shall provide all students with information about their curriculum. It is none too soon then for parents, or those standing *in loco*

parentis, to bestir themselves about seeing how they will best place their sons. The human mind, especially when encased in the garb of Paterfamilias, tends to move slowly, and hence is usually inclined to procrastinate. This is bad policy. The work of finding an experienced teacher and *practical* dentist should not be delayed ; all plans for the coming session cannot be framed too soon, nor can a clear look ahead be neglected for those youths who, having completed their apprenticeship are looking forward to hospital routine. The natural result of putting off arrangements is that just at the last there is a hurry and a scurry to get youths well housed and looked after, and only too often a bad selection is made. So very much depends on the regular, businesslike starting of youths in the battle of life, that much care and thought ought in every case to be bestowed before the final steps are taken. The very issue of the students' number in September, means that the information shall be given and duly digested, and arrangements effected before the busy round of the October session is commenced. That session is the most important one, and he who is found lagging then is more than likely to lag to the end of the chapter.

TREATMENT OF CASES OF SWALLOWED DENTURES.—The *Deutsche Med. Zeit.* gives an account of a novel method for the removal of an artificial dental plate that had been accidentally swallowed. It proves that a little ingenuity is sometimes worth more than all the knowledge of the schools.

Dr. Geisselbrecht, a dentist of Furst, was sent for one night to attend a servant girl who had swallowed her artificial teeth. The denture could not be seen, but was felt in the larynx, and pushed through the cardiac orifice. Dr. Geisselbrecht reflecting that the gold clasps of the rubber plate and the many sharp points would prevent or retard its passage through the digestive canal, as well as probably injure the intestines, set his wits to work to smooth its journey. He cut spool cotton into small pieces, and incorporated them with the white of eggs, beaten up to a froth, and made the girl swallow a quantity of it. The result, says the *Independent Practitioner*, was eminently successful, the plate being passed in

due time without pain or material inconvenience, and upon examination it was found completely invested with the thread, and with its sharp points well protected by their entanglement.

TUBERCULOUS AFFECTIONS OF THE ACCESSIBLE MUCOUS MEMBRANES.—Herr Volkmann, of Halle, read an interesting paper before the recent Congress of the German Surgical Society held in Berlin upon "Surgical Experiences in Tuberculosis." In speaking of Tuberculous Affections of the Accessible Mucous Membranes, he says: "Tuberculosis of the tongue exists under the form of ulcerations, or as deep seated nodules, which after a certain time become caseous in their center. Other parts of the mouth may become the seat of tuberculosis which is often mistaken for congenital syphilis. There is also a tuberculous ozæna due to the presence of ulcers on the nasal mucous membrane. This affection is to be carefully distinguished from the so-called scrofulous rhinitis, a very common affection and one dependent upon catarrhal inflammation. Upon the lips the author had twice seen tubercular ulcers."

Herr Maas, of Wurzburg, is reported by the *Medical Record* to have said on this subject that it was often extremely difficult to distinguish between tuberculosis and carcinoma of the tongue, since the former often reached such a degree of swelling as to be readily mistaken for cancer or gumma. The prognosis of lingual tuberculosis was relatively good.

Herr Konig referred to a form of tuberculosis of the nose which the author had not mentioned, namely, tubercular fibroma. This was a tumor composed of fibrous tissue containing numerous tubercles. It often bore a close resemblance to mucous polypus.

Herr Riedel, of Aachen, had removed such a growth from the nasal cavity, and a similar one from the substance of the tongue.

AMERICAN ESTIMATES OF MR. SEWILL'S VIEWS ON CARIES.—The Archives of Dentistry in reviewing Dr. Searle's crushing criticism of Mr. Sewill's little book, says: "Mr. Sewill

is a dogmatic and positive writer, who speaks authoritatively from premises founded upon the observation of others. Without the technical knowledge that should give license to speak magisterially, he assumes to sit in judgment upon those whose work he has never personally verified or disproved. It is little wonder, then, that so logical a writer as Dr. Searle should pierce the joints of his harness in more than one place, and expose the weakness of declarations unsustained by actual demonstration. For every reader of Mr. Sewill's "Critical Summary," we would unhesitatingly prescribe the proper antidote—Dr. Searles Review."

It is somewhat surprising that no one in England has attempted to show up the fallacies and errors shrouded beneath Mr. Sewill's hyperboles.

IS POSSESSION OF A DENTURE NINEPOINTS OF THE LAW.—A curious case was tried before the Sheriff in the District Court in the State of Minnesota. The plaintiff was to supply defendant with superior denture to be paid for on delivery. Defendant obtained possession of the same when plaintiff was away from his office. Upon non-payment of amount claimed defendant was proceeded against, and judgment obtained. An execution being unsuccessful an order was made that defendant should appear before a referee and disclose his property. He appeared and stated that the denture was in his mouth and retained there by suction, contending that it was part of himself and not subject to execution. However, he was compelled to surrender it to the Sheriff, the court ruling the denture to be subject to execution. The denture was eventually put up to public auction. This case is, as far as we know, unique.

MR. RICE, an American dentist, reports the following interesting case in the *Cosmos*:—"In February last a gentleman, aged about sixty, consulted me by advice of his physician. He complained that the muscles of his throat seemed to be drawn so tightly that deglutition was difficult and painful. His mouth was so nearly closed that I was scarcely able to introduce the end of my finger between his

front teeth, while the cheek was so thickened by the swelling that it was impossible for him to close his teeth without lacerating it, and it was much bruised and discoloured. The tissues of the throat were also much swollen. He had not previously consulted a physician or dentist through fear of being informed that the cause of the trouble was cancer, a theory which he had already accepted and under fear of which he had suffered for more than a year. The local trouble and mental disturbance had seriously affected his health, and he suffered at times much pain in his head and throat and in the muscles of the neck, extending into the shoulder and down into the arm. The patient could not remember that the superior right dens sapientiæ had ever erupted. The swollen tissues nearly covered the second molar. Probing through this mass, I came upon a hard, smooth surface which was evidently enamel, and clearly indicated the presence of a tooth. I made a cross-cut back of the second molar down to the process, and another at a right angle across the width of the buried tooth; then crowded the beak of an elevator behind the molar, catching the head of the wisdom tooth and throwing it back toward the throat. A hook elevator placed at the posterior surface of the wisdom tooth completed its dislodgment. There was a discharge of pus, but less than I had anticipated. The approximal surface of the extracted tooth was badly decayed, but did not involve an exposure of the pulp. The pain gradually subsided, and in four weeks' time the parts had resumed their normal condition. In a practice of nearly thirty years I have seen many cases of troublesome wisdom teeth, but none in which a correct diagnosis was so difficult."

Abstracts of British & Foreign Journals.

THE ARCHIVES OF DENTISTRY.

CALIPER-SPREADERS FOR WIDENING THE DENTAL ARCH.

By J. N. FARRAR, M.D., D.D.S., New York City.

The writer says: The main difficulty in devising apparatus for spreading the dental arch is to avoid the clumsiness, espe-

cially for the lower jaw. While it has been comparatively easy to approximate this end in apparatus for continued pressure by the use of wire worked into various modifications of the U and W spring, greatly improved by Dr. Talbot, and others; apparatus for intermittent pressure for this purpose, owing to mechanical necessities, has not been satisfactorily accomplished.

The writer believes his calipers, although far from perfect, are very useful. The name calipers has been given to these instruments because they act upon the principle of the curved legged compass.

The calipers are not practicable in all cases, but are in many, and supply the want, viz., intermittent pressure. The application of intermittent pressure the writer believes, to be the acme for regulating teeth, and that it will eventually be accepted and adopted by the profession whenever practicable, being in harmony with physiological law.

These calipers are somewhat difficult to construct, but when once in readiness their application is simple and easy.

The caliper spreader may be said to consist of four parts, a body, two points, the spreading device, and tooth clasps or bands, all of which may be made of gold, steel (nickel plated), or other metal suitable for strength and rigidity, combined with delicacy.

The simplest modification consists simply of a steel wire bent in the form of a letter V, and a stiff bridge-piece, with a groove or a hole in each extremity in which the wire rests, and two ferules which slide on them.

The operation of this device, which is only applicable in a small percentage of cases, consists in springing the legs apart by causing the ferules to approach each other, which draws the wire bow toward the bridge or cross-piece. To prevent the ferules from slipping out of place, they are made with points on the inside which fits in a row of pits made in the bridge-piece.

Various modifications are given and their details pointed out in woodcuts accompanying the text.

For the lower jaw a modification in hard rubber with a gold hinge on a screw may be made to serve in some cases.

In constructing any of these devices they should be made as light as possible and fitted at every step to a zinc model of average size in order to lie closely to the tissues when in use.

The legs of these spreaders, when applied, must be bent so as to impinge upon only the teeth to be moved, leaving the parts near but not in contact with the remaining teeth, and other should also lie close to the gum in order to cause the least inconvenience. To prevent the spreader from falling out of its place, the slender, wire-like legs or points (about the size of a knitting needle) should project through and beyond the clasps or clamp bands or be tied in front with a string or wire to one of the teeth. In conclusion it may be said that the chief advantage of these devices over the yoke-jackscrews across the mouth is their adaptation to the lower jaw, which, if properly made work well, but if not are of little or no use.

THE INDEPENDENT PRACTITIONER.

ON THE AVAILABILITY OF CERTAIN ANTISEPTICS IN THE PHOPHYLACTIC TREATMENT OF THE ORAL CAVITY.

By Prof. W. D. MILLER, Berlin.

He gives a list of Antiseptics, showing the value of each as a bacteriacide :—

Antiseptic Agents.	Development of Fungi Prevented.	Antiseptic Agents.	Development of Fungi Prevented.
Bichloride of mercury	1-100,000	Carbolic acid ...	1-500
Nitrate of silver ...	1-50,000	Hydrochloric acid ...	1-500
Peroxide of hydrogen* ...	1-8,000	Biborate of soda* ...	1-350
Iodine ...	1-6,000	Arsenious acid* ...	1-250
Iodoform ...	1-5,000	Chloride of zinc ...	1-250
Napthalin... ..	1-4,000	Lactic acid ...	1-125
Salicylic acid (Crystals)*	1-2,000	Carbonate of sodium ...	1-100
Oil of mustard... ..	1-2,000	Listerine* ...	1-200
Benzoic acid* ...	1-1,500	Alcohol ...	1-10
Potassium permanganate ...	1-1,000	Chlorate of potash* ...	1-8
Eucalyptus ...	1-600		

The real value of these antiseptics is not proportional to the numbers in the above table. Dr. Miller proposes in this paper to discuss the availability of the different forms of energy contained in the various antiseptics.

* The substances indicated by a star were tested upon pure cultures of the fungus; the others on mixtures. In a general way stronger solutions are necessary to sterilize mixtures than to sterilize pure cultures.

The substances thus far experimented upon are bichloride of mercury 1-2,500 and 1-5,000 ; carbolic acid 1-100 ; permanganate of potash 1-4,000 ; peroxide of hydrogen 1-10 ; boracic acid 1-50 ; benzoic acid 1-100 and 1-200 ; salicylic acid 1-100 and 1-200 ; listerine undiluted ; oil of peppermint and oil of wintergreen in agreeable strength for a mouth wash. In each case, the highest concentrations which may be used in the mouth, either as a wash or on the brush were employed. The 1 per cent. solution of benzoic and salicylic acids (in 20 per cent. alcohol) is rather too sharp to be ordinarily used for rinsing the mouth, but may be applied on the brush ; so with listerine.

Rinsing the mouth does not usually keep the liquid in contact with the teeth for more than a minute, hence it is necessary that an antiseptic mouth-wash should kill the fungi of the mouth in one minute, or less. To determine this, he procures—1st, a tube containing a pure culture of some one of the more important fungi of the human mouth ; (infecting tube.) 2nd, A tube containing 5,0 cc. of the antiseptic to be experimented with ; (antiseptic tube.) 3rd, Tubes containing 5,0 cc. of culture liquid ; (culture tubes.) A small drop or bead is conveyed from the infecting tube to the antiseptic tube on a loop of fine platinum wire, and then, at intervals varying from one-quarter of a minute to fifteen minutes, beads are conveyed from the antiseptic tube to each of the culture tubes in succession (one bead to each tube.) These tubes are then kept at the temperature of the oral cavity. If the fungi were devitalised by the action of the antiseptic, the culture liquid remains clear ; otherwise, cloudy.

To control these experiments. 1st, Two culture tubes were infected, using only sterilized water in the antiseptic tube. These two tubes should become cloudy in seven to ten hours, and if others of the tubes become cloudy in the same time the antiseptic through which the fungi were passed had no effect upon them. The delay in the appearance of the cloudiness indicates the strength of the action of the antiseptic.

2nd. The experiment should be repeated, using only sterilized water in both the infecting and antiseptic tubes.

the culture tubes should remain permanently clear. If the culture tubes become cloudy, it means clumsiness on the part of the experimenter, and his experiments would be worthless. The air of the room should be sterilized before experimenting with vaporised sublimate.

The results are given. The first column gives antiseptics ; and the second, the time of exposure necessary to a complete devitalization :

Salicylic acid	1-100	$\frac{1}{4}$ min.*	Peroxide of hydrogen,	
Benzoic acid	1-100	$\frac{1}{4}$ "	10 per cent. solution	10 to 15 "
Listerine, pure ...		$\frac{1}{4}$ to $\frac{1}{2}$ min.	Carbolic acid, 1 per cent.	10 to 15 "
Salicylic acid	1-200	$\frac{1}{4}$ "	Oil of peppermint	10 to 15 "
Benzoic acid	1-200	1 to 2 "	Permanganate	
Bichloride of			of potash 1-4,000	over 15 "
mercury	1-2,500	$\frac{2}{3}$ to $\frac{3}{4}$ "	Boracic acid	1-50 " 15 "
" "	1-5,000	2 to 5 min.	Oil of wintergreen	" 15 "
Eucalyptus	1-200	5 to 10 "		

Hence only four are available for the prophylactic treatment of the mouth. Bichloride of mercury, benzoic acid, salicylic acid and listerine.

The bichloride is, Dr. Miller thinks, the most effective, its action continuing longer. To sterilize the oral cavity, a very serious difficulty is encountered. The antiseptic cannot, in many cases, be brought into contact with all portions of it ; approximal surfaces, fissures, cavities, especially when stopped up with food and various deposits, escape the action of the antiseptic, unless kept for some minutes in the mouth. It is here that the bichloride possesses an advantage ; after the body of the liquid has been put out of the mouth, the traces remaining continue their action even after they have been diluted forty times by the oral secretions. It is more penetrating than benzoic and salicylic acids. To show the power of the bichloride rinse the mouth thoroughly with a solution (1-2,500), keeping it one minute in the mouth. Half an hour later chew a small lump of sugar, secrete about 3 to 5 cc. of saliva, bring it into a sterilized test tube, and keep it at blood temperature. After 24 hours, no fermentation has occurred, though it usually shows itself in three or four hours.

The bichloride is very poisonous. The maximum dose of

* Probably less time is necessary, but the transference could not well be made more quickly.

corrosive sublimate, *pro die*, is 0, 1. Dr. Miller thinks, with care, the quantity absorbed must be very small; however, he does not recommend its use to patients, although he employs it himself. Bichloride of mercury has power, it is said, to decalcify the teeth, but this needs confirmation.

Salicylic acid is said to be injurious to the teeth; others deny this. Buch, using a solution of 3 to 1,000 for some weeks, discontinued its use, because of "a curious feeling in his mouth; the teeth became softer and their surfaces rough through the formation of the salicylate of lime." A Berlin chemist, however, used a much stronger solution for over ten years. His teeth, when he began, were very bad, using salicylic acid stopped all caries. Salicylic acid must be used in the mouth with great caution.

COCAINE IN DENTAL SURGERY.

By Dr. H. TH. HILLISCHER, Dentist, of Vienna.

The experiments narrated were carried out immediately on reading Dr. Koller's communication upon cocaine. Dr. Jelinck is quoted:—"I regarded it from the first as useless to attempt the employment of cocaine as an anæsthetic in the extraction of teeth."

Two separate sets of experiments were undertaken to ascertain, 1st, the effects of cocaine upon the tissues and constituent parts of the teeth, especially the sensitive dentine and the exposed pulps, and, 2nd, its effects, both when applied endermittically to the buccal mucous membrane, and when subcutaneously injected into the same, and afterwards into its underlying osseous structure.

Cocaine-hydrochlorate was used in 150 cases: 110 to the teeth, and 40 to the gums and bones (in connection with extractions). The first series had been partially anticipated, when morphia and chloral-hydrate were employed to deaden the sensibility of denture et cœt. Not being satisfied, however, with the degree of success obtained in this direction, he refrained from publishing anything upon the subject.

Cocaine-hydrochlorate in 2 and 5 per cent. watery solutions, in 10 and 20 per cent. solutions of alcohol and water, and in a

50 per cent. alcoholic solution were used in the form of powder, and finally, rubbed up into a paste with a trace of glycerine. Cocaine was combined with various portions of chloral-hydrate, viz.: two to one, one-half to one; likewise, with chloral and morphine, in the following proportions:—

Cocaine 1, Chloral .05, Morphine .01.

Cocaine 100, Chloral 5, Morphine 1.

Cocaine 1, Chloral 1, Morphine 1.

A 2 per cent. solution of cocaine applied to the dentine on pledgets of cotton-wool, or with a camel's hair pencil, obtunds the over-sensitiveness of the tissue in one or two minutes; morphine and chloral-hydrate, in a highly concentrated solution, produce far less effect in a much longer time. The more sensitive the dentine the stronger the solution of cocaine needed. In extremely sensitive dentine in young persons, and in cachectic subjects pure cocaine was used, triturated into a paste with some glycerine, in the carious cavity, and allowed to remain there ten minutes or longer; in some instances even for twenty-four hours.

In these and in all other cases, the addition to the cocaine paste of a little morph. mur. (best in proportion of 200 to 100 of the cocaine) strikingly increases and hastens the effect.

When the superficial dentine layer is thus anæsthetized, it may be removed by the excavator or the drill; in markedly successful cases the anæsthetizing of the dentine is so complete that the drill may be operated at its full power without causing pain. As soon sensitive dentine is again reached the cocaine is repeated, and the procedure is repeated until the cavity is cleansed and prepared for filling.

Exposed pulps were less painful after being touched with a 5 per cent. solution of cocaine (to this he adds morphine); even highly inflamed and swollen pulps were capped (by way of experiment), after treatment with the paste of cocaine and glycerine, although the pulpitis was unchecked. Ulceration and destruction of the pulps of the teeth, and incipient peridentitis, always, demanded extirpation of the pulp.

He devised a new method of procedure. If the exposed

pulp was already so inflamed as to show little prospect of healing, he first anæsthetised the pulps superficially with concentrated cocaine-solution, or with the paste, until the roof of the pulp-cavity could be painlessly removed. He then injected into the wall of the nerve-canal or directly into the pulp, with a Pravaz syringe with the anæsthetised pulp-head, a solution of cocaine of 20 per cent. In two minutes the entire pulp with the nerve-extractor could be painlessly removed.

The high degree of sensibility in the "cuneiform defects" of the "collum dentis" he found relieved by cocaine. Applying cocaine to the soft tissues of the mouth gave a temporary relief. He employed it in ulcers, chronic perostitis, painful extraction, wounds, and often combined it with carbolic acid or chinoline. It was applied on pledgets or injected.

THE ARCHIVES OF DENTISTRY.

PYORRHOEA ALVEOLARIS.

By J. D. PATTERSON, D.D.S.

The disease he says, is catarrhal. The gums are directly affected through breathing, or poisoned by the secretions from nasal, pharyngeal, or laryngeal catarrh.

All air passages are subject to catarrh; *e.g.*, nasal catarrh, laryngeal catarrh, pharyngeal catarrh, et coet. It is an inflammation of the mucous surfaces. Its causes are varied, coryza, and weather influences, it is said, produce it, also dust particles in the air, spores, etc. Its contagiousness is asserted. It is epidemic in character. The exudation is first, watery, salty and serum-like—later contains pus corpuscles and organisms, which are highly irritant and excoriating. The healthy organs near are quickly invaded; from the discharge at the nostril the epidermis becomes highly inflamed. The disease often extends to the cavities of the ethmoid and sphenoid bones, to the maxillary sinus, and the writer thinks, to the cavity of the mouth, and with its acrid secretion, irritating and destroying the attachment of the gum to the tooth, and

instituting the disease we have called "*pyorrhœa alveolaris*." The deposit of calculi is also an accompaniment of catarrhal inflammation.

Thus the catarrh, of the nasal, and other cavities exhibit the phenomena of *pyorrhea alveolaris*. There is swelling and inflammation of the mucous membrane, an effusion, ulceration, and a deposit. The tendency of catarrh to the attack periosteum under the membrane, separating the bone from its soft attachments, and ultimately to absorb and necrose the bone lying beyond. So is it in *pyorrhœa*.

Dr. Patterson has found in all the cases he examined, catarrh, of some part from whence it could have spread, existed, and this, coupled with the similarity of the pathological processes in the *Pyorrhœa* and common catarrh, leads him to infer their common nature.

Writers upon *pyorrhea alveolaris* have frequently called attention to the fact that the disease was aggravated with presence of catarrh and mouth breathing, but apparently have not considered that the discharge from catarrh was so contagious or destructive as to cause such ravages with the tooth's attachments, but the clinical history of catarrh proves it very malignant, especially when coupled with a dyscrasia, and that considerable territory of bone is at times destroyed.

SENSITIVE CAVITIES.

By A. H. BEST, M.D., L.D.S.I., Savannah, Ga.

Those cavities about the cervical borders of teeth are usually considered more sensitive than most others, except an absolutely or almost exposed nerve-pulp. Those forming on the labial and buccal surfaces, which extend to, and often below, the margins of the gums, are especially so.

Commenting upon the absence of any really efficient obtunder, an absence, the writer regards as a benefit, as it makes dentists and patients alike, less ready to undertake operative procedures, he describes his own method of dealing with sensitive cavities.

He has found in practice that the most rapid manner of operating, consistent with the ends desired, is decidedly to be

preferred. Absolute dryness of the cavity materially decreases the pain. He first adjusts the rubber dam, being sure to force it well down below the cervical margin of the cavity, and to secure it in that position so that the cavity is freely exposed. The dental engine is now brought into requisition; a sharp blade-drill is used. While the engine is run at its greatest speed, the drill is made to perforate the bottom of the cavity at almost every point. A burr of the desired size and shape can then be used to consummate the process of excavating and forming the cavity.

In many cases this mode of procedure is said to be almost painless, while in the same mouth an attempt to use the burr first, was often attended with pain of a very excruciating character. The method is simple and expeditious, and is well worth a trial.

Literary Notices and Selections.

EXPOSED DENTAL PULPS AND THEIR TREATMENT.

By Dr. F. S. DUNCAN, Wilmington, Ill.

(Continued from page 726.)

Arsenic is usually combined with the acetate of morphia and moistened with carbolic acid or creasote sufficiently to form a paste, which is applied to the point of exposure on a small pellet of cotton; the morphia is used for the purpose of preventing the pain caused by the irritating action of the arsenic on living tissue—though in most cases the carbolic acid is all that is necessary for this purpose. Some operators prefer to use the arsenic dry and alone, but in using it in this way a greater amount of pain is caused, and its action is less prompt than when combined with carbolic acid. It was formerly supposed that arsenic was soluble in creasote; but this, we are told by later authors, is a mistake.

In its application great care should be exercised not to cause pressure on the pulp, or pain will necessarily follow. As a rule, a rubber should be applied to the tooth and a sufficient amount of the dentine removed to fully expose the

pulp, the arsenic applied, and the cavity sealed up with wax or gutta percha. The use of cotton saturated with sandarach varnish, I regard as insufficient in most cases for retaining the preparation in the cavity, as the patient is liable to get it out into the mouth and swallow it, which, if a large quantity was used, *might* result seriously; or, even if not swallowed, the tissues would be partially destroyed with which it comes in contact.

The remedy should be permitted to remain in the cavity for from six to twenty-four hours; the length of time depending upon the density of the tooth, age of patient, susceptibility to its effect, and the quantity used.

I have known pulps to become devitalized in from two to three hours. I also remember one case where several applications failed to accomplish the desired result, though its effect on the pericementum was very marked. The remedy should always be removed as soon as the pulp is dead, and the pulp-chamber freely opened, thus preventing discolouration of the tooth by the infiltration of fluids into the dentinal tubuli. The dead pulp is more easily removed, if permitted to remain in the canals for a few days after devitalization.

In capping an exposed pulp after it has been brought to as nearly a state of health as possible, a material must be selected that is compatible with living tissue. For this purpose it must be a non-irritant and a good non-conductor of heat, thus protecting the pulp from thermal change; it should be of such a nature as will not undergo chemical change after the operation has been completed; it should be of such consistence as to be easily manipulated, and when placed in position will not cause pressure upon the pulp and yet occupy all the space; it should be sufficiently resistant to withstand the pressure necessary in introducing and consolidating the filling of whatever material it may be.

As there have been suggested and practised so many different methods of protecting an exposed pulp, and as nearly every operator has a *favourite* way of performing this operation, I will only notice here a very few of the many different modes that have been practised.

Dr. Cravens was the originator of a method of treating

exposed pulps by which it was desired to induce the formation of secondary dentine. After the cavity was thoroughly cleaned and dried, the point of exposure was covered with a paste, made by placing on a warm slab of ground glass a drop of Merck's lactic acid, to which was added phosphate of lime, thus forming the lacto-phosphate of lime. After removing the moisture from the surface of this capping of paste with some absorbent material, it was covered with two or three plies of bibulous paper, moistened with sweet oil; the cavity was then filled with os-artificial, using care not to cause pressure on the pulp. This should remain in the cavity or from two to six weeks, and one application is regarded as sufficient to induce a bony deposit to close the orifice of exposure.

The theory was, that the phosphate of lime applied in this way was appropriated by nature in forming the osseous deposit or secondary dentine for the protection of the pulp. I am unable to say as to the success of this treatment.

Another method that has been practised to some extent is to shave, with a sharp excavator, from the healthy portion of the teeth, enough living dentine to cover the point of exposure. I believe the theory is that the particles of living dentine form centres of ossification for secondary dentine, just as the transplantation of small portions of the epidermis assist in forming healthy cuticle, or of small portions of the periosteum or bone to act as centres of calcification.

It is very desirable to obtain a protection of secondary dentine if it is possible to get it, as nature's own production would certainly be received much more kindly by the pulp than any artificial substitute.

There have been a number of artificial substances used for the permanent protection of exposed pulps, after having restored them to a comparative state of health. Discs of gold and lead were once employed for this purpose, but are now obsolete. A solution of gutta-percha in chloroform, collodion, oiled silk, asbestos and adhesive plaster have been used. The oxide of zinc has been mixed with different liquids to form a paste for the capping process, and is probably used in combination with creosote to as great an extent

as any other preparation to-day. The oxy-phosphate of zinc cement is also very extensively used for this purpose, and is a good material in the majority of cases. The oxy-chloride of zinc was formerly employed for capping exposed pulps, but has fallen into disuse among the more conservative class of operators, from the fact that its irritant qualities produced severe pain, and in many cases death of the pulp; even after the pulp has been protected by a paste of zinc oxide and carbolic acid, as has been recommended, it will, in many cases, produce intense pain, if not devitalization—and as we now have, in the oxy-phosphate, a material in every particular superior to the oxy-chloride its use for this purpose should be tabooed by every conscientious operator.

FOOD—ANIMAL AND VEGETABLE.

By E. J. LILLY, M.D., D.D.S., Circleville, O.

(Continued from page 764.)

There are some who make wheaten food, and not beef, the basis of alimenation, wheat and the allied sub-foods, including beans, lentils, peas, and rice, taking the place of animal foods, including besides flesh-meats, butter, cheese, eggs, and milk. Sound, ripe wheat, deprived of its outer silicious husk, coarsely ground and mixed with water, and subjected to such kneading and baking, as will prepare it for mastication and digestion, is the staff of life. It must be chewed and salivated to insure digestion. Wheat, coarsely ground and unbolted, contains all the natural nutritive elements of the grain. The salts of lime, in unbolted flour, are instrumental in the production of firm, strong bones and teeth. If this is excluded the bread is no better in any way. It is estimated that every child consumes one half barrel of flour every year. If this is true, and it is fed on fine white flour, it is yearly deprived of about twenty pounds of the elements that ought to be taken into the system to make solid bones and teeth. Besides this coarsely ground grain possesses the mechanical properties which distend the intestines, promoting their peristaltic action. It is, therefore, antidotal to dyspepsia. For children it is specially valuable, and its substitution for common bread, with the use of fruits instead of flesh, till the deciduous teeth

shall have given place to the permanent, would be of incalculable value, and contribute to the formation of perfect teeth. This process of feeding might be kept up throughout childhood, and even adult life, for in vegetables we have foods closely analogous to the flesh of the animals. Thus, in addition to the water and salts, common to both, there is vegetable jelly, albumen, fibrine, and caseine, all having a composition almost identical with animal albumen, gelatine, chondrine, and caseine. Such vegetable foods as contain albumen, when taken with those containing starch, notably aid in the digestion of the latter. And still, taking an equal quantity of vegetable and animal albumen, twice as much of the latter will be absorbed. This difference in absorption makes the essential difference between the two foods. Bread, rice, potatoes, maize, taken in any quantity can scarcely support the life of any man or carnivorous animal, as they communicate no bodily strength. Yet, with the addition of a small quantity of albumen, they may suffice. Of course one may sustain life on distinctively vegetable fare. The vegetable eater can extract from his food all the principles necessary for life and its activities, provided he selects vegetables which contain these elements. But he must consume the best cereals, wheat or oats, or the legumes, peas, beans, or lentils, or else he must swallow and digest a large weight of vegetable matter of less nutritive value, and therefore, containing one element in great excess, in order to obtain what he needs. All this waste of digestive energy could be saved by the judicious admixture of animal and vegetable materials. So the question as to whether man is designed to be a vegetable feeder, a flesh eater, or an omnivorous animal, seems to favour the latter supposition. His teeth show that he is and has been omnivorous, to the extent of his means. And as man is physiologically constituted so as to be able to derive all that is necessary to the healthy performance of his functions from the animal or from the vegetable, either singly or combined, he can scarcely be regarded otherwise than as qualified to be omnivorous. Add to this his possession of an intelligence, which enables him to obtain food of all kinds from all climes, to investigate its qualities and render it more fit for diges-

tion, by the use of heat and of condiments—powers which no other animal possesses—and there appears no reason for limiting his diet to the products of either kingdom exclusively. We all like to find our food agreeably flavoured, and to have it prepared in such a way as to acquire the peculiar flavour that pleases us. For the same reason we like a variety in food. In time the persistent impression of one flavour produces disgust, just as the continued use of one article of food will cause a dislike for it.

VACANCY.

NATIONAL DENTAL HOSPITAL.—The post of Assistant Dental Surgeon to the above hospital is vacant. Applications are requested from gentlemen holding degree of Licentiate of Dental Surgery, on or before September 29th., to the Secretary.

APPOINTMENT.

W. Alfred H. Thomas, L.D.S., Edin., has been appointed Honorary Dental Surgeon to the Birkenhead Eye and Ear Hospital.

CORRESPONDENCE.

To the Editor of the British Journal of Dental Science.

Sir,—Discussion upon the qualities of the different amalgams introduced of late years being now pretty well exhausted, and no definite result as to the supremacy of any one produce satisfactorily arrived at, I would suggest that it might be of advantage to the profession and of considerable benefit to their patients, if those practitioners, who have habitually used Palladium, would publish the result of their experience of it as a filling.

I observe that Mr. Jones at the June meeting of the Odontological Society, in describing some few experiments with sundry amalgams, and in supporting certain methods of manipulating them to ensure the zinc and non-water-tight fillings, states that in his comparisons "he had not used Palladium amalgam because he was already aware that he could make a water-tight filling with it."—I am, sir, yours faithfully

W. SPRINGFIELD.

Lowestoft, 19 Aug., 1885.

COMMUNICATION RECEIVED.—W. Springfield, Kellinck; C. Down, Alf. H. Thomas, Birkenhead; W. MacDonald, Cheshire; Mr. Hill, London.

British Journal of Dental Science.

No. 424. LONDON, SEPT. 15, 1885. VOL. XXVIII.

EMERGENCIES OF ANÆSTHETISING, AND HOW TO MEET THEM.

No. II.—NITROUS OXIDE.

By DUDLEY W. BUXTON, M.D., B.S., M.R.C.P.,
Administrator of Anæsthetics in University College Hospital,
London, and the Hospital for Women, Soho Square.

In the first paper of this series it was urged that the main danger which arises from the use of anæsthetics is the want of preparation on the part of the administrator. To be forewarned is to be forearmed. It will happen to very many practical dentists and students that they will be called upon to administer nitrous oxide—laughing gas—to all sorts and conditions of men, women, and children. Among these the majority will inhale the gas quietly, will sink into a lotus eater's trance, and awaken with a pleasant smile or perhaps a rippling laugh—will awaken to the happy consciousness that their period of trial is over, and their tooth or teeth have been removed. But with some this is not so. Let us take the difficulties in the order of time in which they occur, that is to say let us anticipate dangers and difficulties arising when the inhalation is commenced, and later on study complications which may supervene in the middle or at the close of the nitrous oxide inhalations.

Before commencing the inhalation it is always well to assure yourself that the patient is neither faint from a prolonged fast nor heavy from a recent meal. In the last case, one remembers that the bulk of the blood is lying in the vessels which ramify over the stomach, intestines, liver, spleen, etc., *in fine* along the alimentary track; so that there is a liability not only to vomiting but to syncope.

It is also well *to take stock* of your patient, you can ascertain much by a careful although apparently casual glance. You will detect the wasted visage of phthisis, with its bright peach-like bloom suffusing the cheeks and the nervous repeated cough. Such a patient would make you dread a possible attack of hæmoptysis. The hysterical diathesis with its garrulity, its anxious enquiries as to safety, etc., and firm clutching of your hand, while the restless eye meeting yours seems ashamed to maintain its steady gaze, will surely reveal itself, and will forewarn you that you have a troublesome patient with whom to deal. Having learnt all you can by the *facie* and general bearing of your patient you next see that your apparatus is in gear. I have seen a patient, an athletic undergraduate, nearly asphyxiated through the careless manipulation of a two-way valve. The unhappy victim of this mistake was allowed the breathing space permitted by a common Clover's face-piece, unvalved by the way, and but for his vast strength and the disinclination to be asphyxiated, this gentleman might have run no inconsiderable risk. As it was his courage was so undermined by his experience that he refused to face an ordeal which naturally appeared to him so awful. The administrator was sorely disturbed when I pointed out the cause of the "extraordinary behaviour under nitrous oxide gas." Mr. Braine has, I believe, mentioned a somewhat similar case. He recommends very wisely that the administrator should apply his face-piece to his own countenance before essaying to place it over the patient's face. And *en passant* it may be well to give a word of caution about face-pieces. These must be kept most scrupulously clean, as the saliva of many patients is distinctly capable of conveying infection, so that too much care cannot be expended in this matter. The quality of the gas employed is of some moment, badly prepared nitrous oxide gas is certainly dangerous, but the large makers now supply such good nitrous oxide gas and so cheaply that there is no excuse for the employment of an indifferent make.

The next danger to be thought of and provided against is the gag. All gags must be firmly secured by unfrayed

string, and the end either attached to another gag or twisted round the button of the patient's habit.

The gag if made of wood should be scrutinised for cracks or flaws, and if such are present the gag must be discarded. The importance of this will appear when you remember that in one of the cases of death from or during the administration of nitrous oxide, it was thought that death resulted upon the breaking off of a splinter from the gag, while in a more recent case which occurred in America, the whole gag slipped and entered the larynx.

If the gag is itself sound it is important to ascertain that it is well fixed between sound teeth. If not, either it will split or the patient will insist upon your changing its position as soon as the pressure of the face-piece keeps the antagonising teeth firmly clenched upon the gag. When the gag is duly arranged, a finger of the hand which supports the face-piece may be placed beneath the lower jaw, and so by pressing gently upwards will prevent the teeth from separating, and so permitting the gag to slip.

This slipping of the gag is one of the first things to happen, and should it occur before anæsthesia is complete, it is best to remove the face-piece and re-adjust the gag. However, if your patient is nearly unconscious, and you can assure yourself that the gag has not slipped backwards, you can complete the administration and open the jaws by means of a Fergusson's gag. Of these two modes of procedure I am quite sure that the first is the safest and in the long run the most expeditious.

There is at times a little difficulty in persuading timid patients to inhale freely and not a few are terrified by the feeling of impending suffocation when they commence to inspire the nitrous oxide. As a rule moral suasion, a few encouraging words, or allowing the patient to breathe in atmospheric air through face-piece, will dispel the feeling of terror and fancied danger.

In those cases, fortunately not very common, when patients hold their breath persistently, and so partially asphyxiate themselves, caution is needful. The patient cannot hold his breath for long, but he does hold it quite long enough to de-

arterialise his blood to a risky extent, and so tends to provoke stoppage of respiratory movements and cardiac rhythm. The extreme wretchedness of the patient while in this state induces him to struggle furiously, and so imperils the equilibrium of the furniture in his neighbourhood, as well as of himself and the operator.

To meet this emergency it is better to desist from giving the nitrous oxide, if at the commencement of its administration the patient breathes only in a shallow way, or refuses to breathe at all, and try by encouraging him, to restore his pluck to its normal balance, and dispel panic. Failing this it would be better to crowd on the gas and take good care that no air gains admittance, as if you exclude *all air* he will the quicker take a full inspiration, and the voluntary resistance will cease. It is well in these cases *not* to resist struggling, save in so far as maintaining the patient in the semi-recumbent position in the dental chair, or on the couch. If you remove all breakables to a safe distance and let the patient grasp your thumb while he kicks freely, you will soon find the struggles decrease, and at length cease totally.

In the event of your adopting the method of pushing the inhalation it is necessary to watch carefully the colour of the patient's face, and the state of his pulse. If there seems much cyanosis, or if the pulse shews signs of weakness the inhalation must be stopped, and one or two pressures made with the hands upon the thorax, so as to empty the gas out of the lungs. If the heart's action becomes seriously hampered at any stage of the inhalation, there is one thing which must be done, and done without an instant's delay. The patient is to be placed upon the floor and artificial respiration promptly and efficiently performed. One look should satisfy that there is nothing in the mouth, or impacted in the larynx which has stopped the breathing. All clothing about the neck and loins had, it is presumed, been loosened before inhalation was commenced, so that time need not be wasted about that. The number of respirations we usually take when breathing tranquilly, is about sixteen or seventeen in a minute, so that in performing artificial respiration it is important not to exceed that rate. Again we

take longer to inspire than to empty the chest, so that it is right to maintain the chest open—that is in the position of inspiration for a short period before we empty it. When we empty it we should do so quickly. To perform artificial respiration *efficiently*, it is best to have two operators, and to ensure a ready supply of fresh cool air by opening doors and windows. One person stands above the patient and grasps his arms just above the elbow, each hand seizing one arm. With a “Now” to ensure synchronous action between him and the other operator, he draws the arms away from the sides and abducts them until he has dragged them together above the patient’s head. By this action the ribs and breast bone are drawn up, and the capacity of the chest, both from before backwards, and from side to side is increased. It follows that the lungs will, as it were, unfold, and unless there be some obstruction in the larynx, trachea or bronchi, air will enter and expand the lungs—*inspiration* will have been performed.

The next step is to replace the arms by the sides, and this is done in the same slow regular way as was the raising of the arms. At the instant the arms are depressed (adducted) the person stationed below bends over the patient and places his hands spread out one on each side of the patient’s chest, grasping the lower and floating ribs. By a vigorous pressure the abdominal contents are made to ascend and so push up the great muscle of respiration, the diaphragm. This manœuvre is repeated sixteen times in the minute. As auxiliary measures, it is well to draw the patient’s tongue forward and so to raise and open out the aperture into the larynx, while reflex respiratory efforts are provoked by presenting to the nose the pungent fumes of ammonia, smelling salts or burned feathers. If a third person is present these adjuvant measures may be adopted, and the face may be slapped with the corner of a wetted towel, but it must be borne well in mind that the measure of prime importance, is artificial respiration, and that anything which takes you away from the performance of artificial respiration, leads to loss of time and increases the chances of your patient’s non-resuscitation. There is no doubt that the speedy resort to artificial respiration will save your patient if he is not beyond power of salvation.

FOREIGN BODIES IMPARTED IN THE TRACHEA OR LARYNX.—These accidents are due to the gag being drawn into the larynx or to a tooth having dropped from the beaks of a forceps and falling backwards. It is believed by some that the mere presence of such a body in or about the larynx is capable of causing so much irritation as to induce cessation of the heart's action and respiration. Be this as it may, the mechanical interruption of respiration is a sufficiently serious matter and one requiring immediate treatment. In the case of a large body, the finger is the best instrument, if well crooked it can be passed behind the tongue, and the obtruding substance removed by hooking it forward. If impaction has taken place some snare will have to be improvised from wire twisted into a loop of the required size and fastened on to a long handle. When the foreign body has entered the windpipe its removal is a more serious matter, and one which will need complicated methods and appliances. As is well known, foreign bodies have been shaken up by inverting the patient, but in this case there is grave danger lest it become imparted in the larynx and cause spasm. Speaking broadly, we may say that tracheotomy is the only course open to us in these cases and that this treatment holds out the best chance for the patient's eventual recovery from so grave a strait.

VOMITING.—Is seldom provoked, and still more seldom does it call for special treatment. Blood swallowing is the usual cause, and if this be prevented the patient will but rarely show any inclination to vomit. But in prolonged operations when the elevator has to be much used it is often difficult to prevent some blood entering the œsophagus.

The one direction to be remembered is, that we should remove any gag that may be in the mouth and turn the head to one side, and so prevent the matters vomited from entering the larynx. It is always well to hook up the hyoid bone, by which manœuvre one can raise the larynx and keep it well out of harm's way behind the thick pad or cushion of the tongue.

Some persons are rendered sick for twenty-four hours, but such cases are exceptional, and will hardly come under treatment as an emergency. To get a patient off from the operating

room a useful remedy is a teaspoonful or so of iced coffee, taken without sugar or milk, or a similar dose of sal volatile in soda water. Busy men often will be glad enough to resort to such means to free their room and themselves from the patient and his anxious friends.

Hysterical manifestations during nitrous oxide inhalation are more commonly met with among women and young girls, yet members of the other sex are by no means free from attacks. It is highly important to be very fully alive to the phenomena revealed by hysterical persons under the influence of nitrous oxide gas, as otherwise the administrator may be seriously alarmed, and may run risks of being accused of malpraxis or unprofessional behaviour. It is the moral and physical perturbations to which these persons are subject which renders it so important that no professional man should allow himself to be left singlehanded in a room with his patient. The most outrageous phantasies gain credence in the unhinged mind of the hysteric or hystero-epileptic, and nothing short of unbiassed testimony will serve to disprove statements preferred by the individual who is the subject of the malady.

It has been above stated that nervous and over-sensitive persons will cause trouble by refusing to breathe. Voluntary abstention from breathing, even to the extent of provoking blueness of the face, is a common trick of the hysterical. Any appearance of alarm on the part of spectators, etc., lends fuel to this morbid flame and makes matters worse. The directions given above will meet the case, only it is highly necessary that firmness should temper kindness, while a most complete self-control should be exercised over himself by the administrator that he may evince no sign of fear, anger, or even annoyance.

At the conclusion of the administration, hysterical persons are liable to give expression to their feelings in a fit of hysterics when weeping, laughter, and noisy complaint each struggle for mastery. Others will after apparently returning to their sane senses, relapse into a condition of semi-coma or trance, and so remain for many hours to all appearance quite exhausted and sapped of all vital resistance. Again, you will

meet with persons who, to use a vulgar but expressive phrase, "go quite off their head"—in short, who behave as if they are for the nonce—raving maniacs. While some are thus affected, erotic monomania will in others replace the more furious delusions, but will offer you quite as difficult a condition with which to cope. In all these cases the main indications as to treatment are simple although carrying them into execution needs much tact and firmness. As a rule, hysterical persons do not hurt themselves, but the furniture and moveables will not share their immunity from danger.

Having assured yourself that all bleeding and other possible source of trouble after the operation have been duly attended to, the only further thing to be done is to place your patient under the charge of some trusty female—or man, as the case may be—who by preference should not be a relative, and so to leave them. You will possibly be accused of unskilful administration of the gas, against this you must be prepared by taking scrupulous care during the period you are giving the gas, and by the corroborative evidence of a third person. More than this you cannot do. A firm determined voice will often act as a charm, but anything like roughness of voice or behaviour will inevitably call forth a storm of resentful opposition and will defeat the present object, while in the future it will do much to impair your professional influence, and lessen the respect of your patient for it, if indeed it does not sever all connection betwixt you.

With regard to epileptiform seizures, we should bear in mind that the administration of nitrous oxide does not by any means determine such attacks in epileptics, and should so untoward an accident occur, the treatment requisite will hardly need a departure from what one is familiar with in dealing with the common epileptic. The assumption of the recumbent posture must first be seen to, and then care be taken that the patient bites upon a piece of cork or lead, and so does not inflict injury upon his tongue. I do not think the fact that a patient has just had an epileptic seizure need prevent your giving him nitrous-oxide gas, although it would, of course, render you doubly upon the alert in case of the supervention of untoward symptoms.

The various mal-issues of nitrous-oxide inhalation which were tabulated in the preceding paper have now been dealt with, excepting those grouped under the head paralytic. These are matters of very great difficulty, because while many of them are pseudo-paralytic, and really belong to the class of hysterical manifestations, yet some are of an utterly different type and owe their origin to causes quite other than over-sensitiveness. The treatment as far as any can be attempted on the spur of the moment, would be rest, quiet, and friction. Of course subsequent treatment will in these cases be needed, but with that we are not at present concerned.

In conclusion, we must notice, although we may not offer much in the way of treatment, two troublesome symptoms which are sometimes of the greatest annoyance. These are an exaggerated form of tinnitus aurium with ringing noises in the head, and secondly a severe persistent headache lasting for days, and accompanied by visual as well as aural disorders. These cases are happily rare, they, however, do occur and can only be treated upon general principles, regard being had to the state and condition of the patient at the time of the onset of the troublesome symptoms.

These, then, are some of the emergencies which may happen when one is giving nitrous oxide gas, and for which we must be ready with a plan of treatment. Nitrous oxide is the safest anæsthetic to take, it is, however, far from the easiest to administer *well*, and no one unless reckless beyond reason should attempt to employ the agent without being well trained in the rules set forth by writers or still better by practical administrators, when actually engaged in giving the gas. Nor should the administrator fail to be ready if the fates have it that something goes wrong while he is administering, if he keeps cool and knows what to do, all will go well, if he loses his self-command and gives the reins to panic, the result will prove only too ghastly to contemplate.

British Journal of Dental Science.

LONDON, SEPTEMBER 15, 1885.

TO STUDENTS.

"We live in a practical age." Twist and turn this sentence about as one likes, it amounts to this, that we who live now have to look out for a livelihood and that day by day the contest grows more keen and bitter. The difficulties met with by students are increasing each year, and since more young men rush into the professions, the standards become raised and the examinational rejections are more numerous.

These rejections are unnecessary in many cases, and only indirectly the fault of the students. They arise from a want of foreknowledge and from the fact that they commence their *curriculum* without appreciating what is before them and what is expected from them.

The dental student's career is much what used to be passed through by medical students, and many of the unfavourable criticisms which were formerly urged against it in the case of medical students, apply with an equal force where dental students are concerned. The character of the work done during an apprenticeship and the quota of learning and experience gained, vary within the widest possible limits. While some youths pass to the Dental Hospitals fairly well versed in mechanical work and not inexpert in operating, others are found who not only know nothing but can *do* nothing. It makes all the difference whether a student has learned to overcome the stage when "all his fingers are thumbs." But now that we have shown that the path is difficult, it behoves us also to indicate how it may be rendered less arduous and at last a successful issue be attained.

To make a good dentist a youth needs a strong physique, a fair supply of reasoning power, an ingenuity which is rarely baffled, together with tact, and the feelings and polish of a gentleman. Granted that these qualities are at hand for his stock-in-trade, the first step will be to find a suitable man to whom to apprentice the student. There are many good dentists, but only a few who possess the knack of imparting know-

ledge. Too many youths fail because, while in their apprenticeship they get into bad company, and having no one to advise them they speedily travel from bad to worse. Very young boys had far better be housed with friends and their evenings made cheerful *at home*. To really earnest students much valuable work may and should be got through during their apprenticeship. The wise student will, however, avoid giving up his time solely to dental work. His hands, his eye, and his mind will each require special and careful culture. The "handy" youth will be the best operator, the clumsy one the worst, but handiness comes only by cultivation of manipulation, just as clumsiness follows its defect. Perhaps the most important matter the average student has to learn is that examinations are not ordeals to be passed through, but are, or should be, tests of the progress made. The mere scraping through such a test must, in most cases, be regarded as a misfortune, since it permits a mere smatterer to forsake his classes and try his "prentice hand" on society. All existing examinational tests must be admitted to be highly unsatisfactory, so that the aims for which the student should strive must be to obtain through mastery of his subjects, this being achieved the examination loses its horrors and involves a *Pass* as a matter of course.

The question of the advisability of attempting to obtain a surgical diploma by the dental student is one difficult to answer. The possessor of the diploma takes a higher status among his colleagues, provided he can show that he really owns the knowledge his College attests to. There is no doubt, however, that in the long run the *individual* who succeeds is he who knows his business best, and not the one who has scrambled through the higher examinations. Surgical diplomas help a really intelligent man, but they are practically useless to the unready, unthorough man.

The hospital work of students is the key-stone of their after lives. If they play ducks and drakes with its opportunities and chances they will inevitably either ruin their whole life or lose years of possibly promise and garner up stores of disease, misery, and early death with penury. Only those who have passed through their hospital career, and

have been thrown into active practice know the value of the hospital training and hospital experience. Even the earnest student at the end of his last session would gladly re-enter his hospital course, and again work through its routine. And one word about this hospital life. Outside its mere professional teaching it offers rare chances and help to students in its students' societies, and students' gatherings. These societies teach most salient matters. By them students learn to collect their ideas and shape them into papers, to discuss and criticise. In this way rapid and clear thought becomes a habit, while a readiness in debate soon replaces the bashful stammer which usually marks the *debut* of the student orator. In after life all these matters go far towards establishing success, and no student who really aims at a useful and honourable career as a dentist can afford to neglect any of such opportunities.

In conclusion we will draw our readers' attention to the carefully compiled supplement to the present number, which furnishes all the information concerning the dental schools, colleges, and examining boards at present existing in the United Kingdom.

THE STUDENT'S CAREER.

It will prove useful to many to learn a few facts concerning the course the dental student has to pursue before he can become qualified.

PRELIMINARY EXAMINATION.

Unless the student commenced his professional curriculum before July, 1878, he is compelled to pass a preliminary examination in general education. On page will be found a list of the examinations which satisfy the requirements of the General Medical Council. These comprise certain examinations held by the Universities of Oxford and Cambridge, London, Durham, Edinburgh, Aberdeen, Glasgow, St. Andrew's, Dublin, Queen's, Royal University of Ireland,

Oxford and Cambridge Schools Examination Board, Victoria University. The Apothecaries Society of London, and several other bodies hold examinations which are deemed adequate by the General Council. It is important to remember that the severity of these different examinations varies very much ; but, although it may be well to ensure *a pass*, yet, unless the student is quite certain he will be content with a practising diploma, it is best that he should select the preliminary which will open the door to the higher professional examinations, such as the College of Surgeons of England, or one of the Universities. Unless he does this he will have to pass again in the preliminary prescribed by the bodies to whom he desires to become affiliated.

REGISTRATION.

It is essential that the student should within a fortnight of his passing his preliminary in general education, register his name *as a dental student*, at the office of the General Medical Council, 299, Oxford Street, London. Subsequent to this he has to follow up his professional studies for four years.

APPRENTICESHIP.

It is compulsory that the student should enter into articles to a duly qualified and practising dentist, with whom he has to remain for three years, and acquire a knowledge of Mechanical Dentistry.

HOSPITAL WORK.

As mentioned above the student has to spend four years in professional study, how he spends these years will vary according as he selects one or the other of the examining boards from which to obtain his qualification, and according as he decides upon attending a dental hospital, or the dental department of a general hospital. He will have to attend certain courses of lectures, and pass through two years instructions in the hospital. There are some differences in the compulsory lectures and so on in the various curricula set forth by the examinational boards which will be seen upon reference to another part of the JOURNAL of this month.

QUALIFICATIONS.

Having completed the prescribed course of study the

student presents himself for examination before the particular board he has selected, and should he pass as he should do, provided he has given fair attention and industry to his work, he once more goes to the office of the Medical Council, and enrolls himself as a qualified dentist. His future career he must carve for himself. unless he possesses very poor or bad qualities, Dentistry will offer him a great field for enterprise and success. If he fails it will probably be his own fault.

EXTIRPATION OF THE LARYNX.—A case is reported from the Clinic of Professor Park of Buffalo. The patient was a gentleman aged 64, the subject of malignant growth of the Larynx. He had been under the care of several well known specialists. Not long before the death of Dr. Louis Elsberg, he removed a large amount of the growth by the intra-laryngeal method. Dr. Park removed the cricoid cartilages and thyroid, with about two inches of the trachea. The hyoid bone and the uvula were taken out, and the œsophagus opened at the wound, that the man might be artificially fed, for, of course, with the removal of the hyoid bone all command of the muscles of the mouth and pharynx is lost. The delicacy of the operation, which lasted just an hour, may be understood when the character of the operation is comprehended. Dr. Park proposed to insert an artificial larynx, containing reeds to serve in place of the removed vocal cords, this he thinks will restore speech sufficiently to enable the patient to make himself understood. This is the third time that the operation has been performed in America. A month after the operation the patient was reported to be doing well. Several similar cases have from time to time been reported from the German hospitals.

DR. HARLON ON PYORRHŒA.—A frequent cause of failure in treating Pyorrhœa is the failure to remove the debris. This cannot be thoroughly done merely with a syringe and water. It will often be found necessary to make a transverse slit in the gum to make certain thorough work. If made perpendicular it must be extensive, to prevent pucker

of the gum into festoons; thorough work on mesial and distal surfaces is only possible by a transverse cut through the gum. On the labial surfaces it is easy to push away the gum. Exclude the saliva and inject peroxide of hydrogen, full strength as it comes to us. The blood-clot which in other positions furnishes nature's protection is not transformed into tissue. What we most need is something that will destroy bacteria. The fungus of *Pyorrhœa* is not yet satisfactorily classified. That true *Pyorrhœa* is infectious I have demonstrated in one month where I purposely introduced pus from *Pyorrhœa* beneath a healthy gum. You may call the result satisfactory or unsatisfactory, the tooth was lost.

The moral is that our instruments must be cleansed in preparations that will destroy spores, if we would not propagate the disease. There is no advantage in over treatment; every three or four days is often enough. Let there be intervals of rest in which nature can work.

THE VALUE OF MENTHOL IN DENTAL PRACTICE.—Some issues back we drew attention to the value of Menthol in Dental Practice, the following case of Dr. Phillips seems to confirm the estimate we expressed of its value. The patient complained of pain superintensified. He had himself employed a menthol pencil, and had endeavoured to relieve the disturbance by applying the same on the face, over the offending member, but with no result save the cold sensation produced by the volatilization of the agent. The pain having become more severe, the patient then raised the lip and applied the pencil directly to the gum. Here the sensation produced was described as warm and grateful, with a marked diminution of pain in a short time, which after a second application, entirely ceased. Dr. Phillips has employed a solution both simple and combined with other medicaments, with good results. In cases of facial neuralgia, as a topical application over the nerve track, it is often highly gratifying, and particularly is this the case when the cause originates within the oral cavity, where it may at the same time be employed. A trial of a good menthol preparation will place it in the medicine case of the dental practitioner as an agent of no little value.

Abstracts of British & Foreign Journals.

DENTAL COSMOS.

CONCERNING SEPARATORS.

By SAFFORD G. PERRY, D.D.S., New York.

The advantages to be derived from a device by which the teeth without previous wedging can be drawn apart and held in position while operations are made upon their approximal surfaces are obvious.

The Jarvis separators demonstrated that by a screw most of the teeth could be separated, and that the operation was safe and almost painless. But when in position they were in the way, and prevented approach to the surfaces they were intended to expose. Dr. Perry to meet this difficulty has invented a new separator adapted to the shapes of the different teeth. Johnston Bros., from a pattern which Dr. Perry gave them, made and sold to the profession the separator. In this separator an effort was made to employ adjusting screws set in the inner jaws of the separators, which should better fit them to teeth of different sizes and positions, but, owing to some inadvertence, they were not submitted to Dr. Perry for revision and approval before being finished, and were not rightly made.

After trial he decided that the only way to meet the requirements of teeth of different size and shape would be to return to the plan of the original separator, and make a set, which should contain one for the front teeth, one for the bicuspid, one for the molars, and perhaps one for the molars and bicuspid.

The S. S. White Company then made some separators according to Dr. Perry's pattern. The general plan of the original separator was followed in completing the patterns for the full set. The shanks were turned down in the same manner, for the purpose of getting them out of the way, and to allow the screw to be placed nearly on a line with the points of bearing of the jaws. The shanks were somewhat shortened to allow their use far back in the mouth without interference from the cheek when used on the outside, or

from the tongue when used on the inside of the mouth. Except in the case of the one adapted to the incisors, the bows were made only large enough to go over the largest teeth that might be met with. They were kept as small as possible to be out of the way in working over them, and to lessen the danger of disturbance or displacement. In the one designed for the incisors the size of the bow was increased beyond the need which might be apparent at first sight. This was done for the purpose of allowing the shank to be used on the outside or the inside of the arch. It seemed desirable to be able to use the separator with the shank and screw on the opposite side from which the approximal surfaces were to be approached. As the upper and lower incisors almost invariably point forward, and as the attachment of the gums is farther from the cutting ends on the outside than on the inside, it will be readily seen that in order to reverse the shank the bow must be enlarged. In other words, a small-bowed, close-fitting separator, which could be most conveniently used with the shank on the outside of the arch, could not be used at all with the shank on the inside, for the small bow would almost invariably strike the ends of the teeth when the separator was thus reversed. The bow of this separator was enlarged so that it could be reversed, even at the risk of the bows being in the way, and of its being more easily disturbed or displaced. It being generally used with the screw and shank on the opposite side from which the approximal surfaces were approached, and the sides of the shank were closed together. The watch-key device for turning the screws was added, and is a great convenience.

Becoming dissatisfied with the working of this reversible, Dr. Perry determined to abandon the idea of making it reversible, and decided to return to the old plan of his first separator. Seeing that the shank could always be used on the outside of both the upper and lower incisors, if the bars of the shank were only set wide apart, so as to give access to the approximal surfaces from the front side of the teeth, and thus would allow the bows to be so reduced in size as to fit close to the teeth, and therefore to allow the operator to get close to his work and be in less danger of disturbing the sep-

arators by such pressure upon the bows as is almost unavoidable in working over them. The reduction of the size of the bows and the setting wide apart of the bars of the shank was easily accomplished, and the result was a separator which in every respect was an improvement, one defect remained : viz., the obstruction caused by the presence of the screw, which still prevented free access to the approximal surfaces from the front side of the teeth, and interfered with the use of the emery-tape and sand-paper disk in finishing. The screw was therefore placed below the points of bearing of the jaws, and turned the shank down so that it and the screw were below the line of the emery-tape when passed at right angles between the teeth. This remodelled separator proved very successful, so that the whole set were remodelled on the same general plan.

There were still some defects. Although the shank was thrown down out of the way, yet it was still sometimes an obstruction. Another fault was the unmechanical application of the force of the screw, and the uneven movement of the jaws. Opening like a pair of pliers, the outside jaws travelled more rapidly than the ones nearest the screw, and being unsupported they were less ready than the inside ones. These defects induced the author to adopt another plan. This consisted in the use of screws passing through the ends of the bows on each side of the teeth to be separated. By these two parallel screws the force could be applied on each side of the teeth where it was needed to give great steadiness, the projecting shank could be omitted, while the size of the bows could be lessened. By cutting right and left threads on opposite ends of the bars rapid movement of the bows was secured, and by making the middle of the bars square, the means of applying a wrench for turning them was obtained. The wrench being straight at one end and having nearly a right-angle curve at the other, it was easy to turn the bars in any position the separator might be placed. Bars were set below the line of the gum, and the bows turned back out of the way on the sides of the teeth, so the emery-tape can be not only passed between the teeth down to the gum, but it can also be considerably wrapped around the tooth toward

the lingual and buccal sides so as to finish to a natural contour. With this separator the approximal surfaces can be approached as readily from one side of the tooth as from the other, and unobstructed light that can be thrown upon even the most obscure parts of the approximal surfaces. With teeth of narrow necks there is a tendency to slip toward the gum when the screws are turned, but this can be overcome in a most effective manner by the use of wedges placed between the bows and the ends of the teeth. As the whole separator is made as close-fitting as possible, it is very easy to adjust the wedges securely. For this purpose little masses of red base-plate guttapercha, warmed and placed under the bows just as one is ready to commence the turning of the screw are the best. It adapts itself so completely to the ends of the teeth and to the bows that when it has cooled and hardened the screws can be turned as tight as desired, with no chance of displacement or danger of the jaws of the separator reaching the gum. In fact, the separator is then held so firmly that the fingers may rest upon it for support, to the greatest advantage, and with no danger of disturbance of the separator. In the performance of delicate operations this opportunity for steadying the fingers and hand is of the utmost importance.

The bar is shorter and the bows are made to converge on the inside of the teeth because of the smaller circle. This separator operates as well upon the lower as upon the upper teeth. Those for the back teeth are very readily adjusted and and operated, and it is with them that the great advantage of this form of separator over that of the other will be seen.

After a considerable trial these separators have proved very useful.

The double screws work easily and give no trouble whatever if only a little care is taken to turn them about equally.

He cautions that in using the separator upon the superior central incisors, there is a possibility, with young patients more particularly, of opening the suture of the superior maxilla.

He then speaks of the use of these separators as matrix holders.

It was suggested to Dr. Perry that they would be held

very securely in position by the use of the separator. The separators being made of steel and tempered, were not as adjustable as required, and they were not of quite the right shape to be always well held by the separators. Substituting brass and changing their shape they were made long enough to wrap well around the tooth, and the shapes are such as to fit them well to the festoon of the gum and to give the separators a firm hold upon them. He uses them in the following manner: The dam is adjusted and the separators applied, the screws turned until the teeth are sufficiently separated to allow the matrix (which is now flat) to be slipped between the teeth. The separator is removed and the matrix bent closely around the tooth. The separator is replaced, the jaws put over the matrix, and the screw is tightened as much as needed. After the filling is completed the separator is removed and the ends of the matrix straightened out, and then he re-applies the separator on the tooth alone. By turning the screw the matrix is loosened and removed, and then the filling is finished with no danger of the slightest loss of contour. The malleability of the brass matrix may be taken advantage of in securing a full contour; for wherever it is desirable to swell the filling it is only necessary there to use the lead or the automatic mallets. Under the application of such force the matrix yields slowly, and the filling can be bulged even beyond the natural contour, if desired. This same malleability of the matrix can also be made to help in securing perfect margins.

Dr. Perry also uses the matrix in another operation. It is that of cutting through from the buccal or the lingual side, instead of down from the grinding surface, when small cavities near the gum on the approximal surfaces of bicuspid and molars are to be filled. It is not to be performed if decay approaches near to the grinding surface, for frail structure here is liable to be broken away by the force of mastication, even though the arch of enamel is supported by a solid filling. In the performance of such an operation, the part of the cavity most difficult to fill accurately is that along the lingual border, when the cavity is opened into from the buccal side, or along the buccal border when approached from the lingual side. He employs a thin-edged brass matrix.

THE DENTAL REGISTER.**ORAL DEFORMITY.**

By Dr. I. A. HOOPER.

Commenting upon the wide-spread lack of learning about oral deformity, Dr. Hooper points out the prime importance of the subject and the consequences likely to arise from ignorance of it. In reply to those who assert that oral deformity does not result from too early extraction of the deciduous teeth, he produces models showing alike the deformities and the *modus operandi* of their production.

No 1 is a young lady aged 14, after consulting several dentists it was decided to extract the first left bicuspid, which was done nine months before the cast was taken. She had been deformed and maimed for life, one side of the mouth is contracted ; one side being nearly one-half inch shorter than the other, and the centre of the mouth is drawn to the side one-quarter of an inch.

No. 2 is a young lady who has met with the same misfortune.

No 3 is a young man from Missouri, a medical student, who is also in the same condition.

No. 4 is a gentleman about 35 years of age, who had two teeth extracted on the left side, you can see what deformity has been produced by this, there is nearly $\frac{3}{4}$ inch difference in the size of the mouth.

No 5 is a young man fifteen years of age, who had the first bicuspid extracted and the front teeth filed, the deformity produced was shown, the front teeth not touching by $\frac{1}{2}$ inch, this shows what filling will do.

An inferior maxillary of an adult was shown where there was a tooth extracted years before death, the opposite side was full, round, and normal, and the other side where the tooth was extracted contracted and fallen in, and there is considerable difference in the length from the centre to the angle of the jaw.

No. 6, a cast of a young man's mouth, now about 20 or 22. His dentist who had always had the care of his teeth, said his teeth were crowded, that he had double rows and tusks were

growing out ; he extracted the so-called tusks or cuspid teeth ; this young man was disfigured and deprived of his full, round, natural arch and manly expression ; the front of his mouth is contracted to the size of a three-year-old child. There is not one case in a hundred where there is a demand for the extraction of teeth to correct irregularities, and any dentist who will extract sound teeth, because the patient wants a pretty set of false teeth, should be prosecuted for malpractice, and debarred the privilege of practicing the profession.

⁴⁰⁰To show the result of manipulation mislead of extraction, he shows models.

No. 1 is a young lady, an adult, the mouth widened $\frac{1}{4}$ inch to nearly $\frac{1}{2}$, and the lateral incisors and one bicuspid fully moved $\frac{1}{4}$ inch. No. 2 is a young lady who was wearing a plate with an artificial tooth as the central incisor had not developed. The point of the tooth was just through the gum, and had been in that condition for two years, in three weeks the author to assisted nature to develop the tooth. No. 3 is a cast of a young man's mouth ; the upper one which has been deformed, the lower right cuspid tooth extends outside of the upper tooth which would be the natural consequence, that the upper was contracted to the size of a three-year-old child. It is pointed out that the lateral incisor had been extracted ; comparing these two casts, the change made in three weeks, is seen. No. 4 is the cast of a young lady's mouth. The arch was widened, and the lateral incisor put out nearly $\frac{1}{2}$ inch. No. 5 is a young lady. She has been through the same treatment as there are some teeth missing. A cast six weeks after treatment was begun, the mouth shows she only wore the apparatus at night. She says she never had any pain from it.

Dr. Hooper's observation and experience compel him to dissent from the old accepted theory of absorption and deposit ; for instance, there are cases in which he has moved teeth from $\frac{1}{4}$ to $\frac{1}{2}$ inch. The old theory is that when you move a tooth you produce absorption on the opposite side and a deposit on the side from which it was moved. He asserts his cases prove the opposite of this. Theory or experience show that if teeth are moved rapidly enough so that the alveoli will bend in

front and contract behind the tooth, as the alveoli is composed very largely of an elastic substance, and is therefore very yielding to pressure, as for instance, when an upper molar or jaw tooth is extracted the alveoli springs or yields sufficiently to get the tooth out without breaking the roots or alveoli. In conclusion he points out that the law takes no cognisance of the mountebanks, who, going the round, extract useful teeth, and so leave life-long deformity behind.

CROWN WORK.

BY M. W. WILLIAMS, Hopkinsville, Ky.

The writer believes the crown he describes surpasses the others commonly in use. The crown is similar to old-fashion wooden pivot crown, except the pivot-hole is lined with platina tube. A similar tube $\frac{1}{4}$ inch long, with bottom and depending shank of platina securely soldered to it designed to be secured in root canal. The lower portion of this tube is slightly larger than orifice. There is solid platina connecting post, in size easily to pass in tubes, in length so that mouths of tubes will meet when in position. The lower $\frac{1}{2}$ inch of post is slitted for reception of key wedge which is a small tapering steel wedge $\frac{1}{4}$ inch long and thickness of No. 1 file at its thickest end.

To adjust it, grind off root and line with gum, enlarge canal, so that tube and its depending shank will drop in loosely beyond level with end of root. Grind base of crown to approximate joint with end of root. Solder unslitted end of post in tube of crown, slip tube of root attachment over slitted end; mix agate cement thin, fill canal one-half full, force all in position, have the patient close the mouth, hold steady in articulating position until cement hardens; withdraw crown and post, leaving root attachment in exact position; trim down the cement, fill out with amalgam, allowing it to spread thinly, all over the end of root; insert small key wedge; place firm piece of wood on cutting edge of crown, with mallet gently drive it home; the end of the key striking the bottom of the tube will force itself in expanding side of post to fill the dovetailed space.

Literary Notices and Selections.

OXY-PHOSPHATE.*

By E. G. BETTY, D.D.S., Cincinnati.

Under the head of "Different Materials for the Methods of Filling Teeth," it may not be amiss to say a few words about our very good servant, oxy-phosphate of zinc.

This substance, as all are aware, is the result of a chemical union between a base and an acid ; but with that part of it we will have nothing to do to-day. I am daily becoming more convinced that this material is of more service than we imagine in this that, it enables us to ultimately save more "aching" teeth than we could were we still dependent upon the oxy-chlorides. It is my custom to fill *all* teeth with it in which the decay has been so extensive as to nearly expose the pulp, those in which it *is* exposed, and dead teeth that have undergone conservative treatment. In case the decay has not exposed the pulp, the *dèbris* is thoroughly removed and the cavity filled with a bolus of the phosphate mixed as dry as possible ; the surplus is then removed and the filling covered with wax or paraffine, or it may be given a smooth surface by polishing with heated tale. Should the pulp be exposed, remove the decay, cover the pulp with some kind of varnish—comp. tinct. benzoin is most excellent, flow over it a little of the phosphate prepared very thin, and when hardened, trim and fill as in the first case. Dead teeth are also to be filled with a stiff bolus. The main point in the use of the phosphate, if you wish to secure full service from it, is to allow the filling to remain as long as it will last, which in very many cases, is about two years. Should it not remain so long, refill. The object of this is to give the tooth a *long rest*, the longer the better ; at the end of a year and half or two years, large operations with cohesive foil will be borne by the tooth so treated with but a slight chance of producing either death of the pulp in the one case, or recurrence of periosteal inflammation in the other.

*Read before the Mad River Valley Dental Society, Dayton, May, 19, 1885

A writer, in the *Independent Practitioner* for May, recommends that a small quantity of iodoform be mixed with the thin oxy-phosphate to be flowed on exostosed pulps, or immediately over the thin dentine covering one almost exposed. Though I have not tried this, yet I am inclined to think the principle is good.—*Dental Register*.

Dental News

BRITISH DENTAL ASSOCIATION.

ANNUAL GENERAL MEETING AT CAMBRIDGE.

The annual general meeting of the British Dental Association was commenced at Cambridge, on Thursday, August 27th, for the transaction of the business of the Association, though some of the events in connection with the Association took place on the evening of August 26th.

PRELIMINARY HOSPITALITY.

On Wednesday evening the Chairman of the Reception Committee (Mr. Alfred Jones), entertained a number of the officers and members of the Representative Board at dinner, and on the same evening, Mr. R. Wentworth White and Dr. George Cunningham held an "at home."

GENERAL BUSINESS MEETING.

A meeting of the Representative Board took place in the committee room of the Union Society, which was followed by a meeting of the Members of the Association in the Debating Hall of the same society. There were 130 persons present, including Sir Edwin Saunders, F.R.C.S.; Mr. C. Spence Bate, F.R.S., L.D.S.; Dr. G. Cunningham, Cambridge; Mr. F. Canton, L.R.C.P.L., M.R.C.S., L.S.A., L.D.S.E.; Mr. J. S. Turner, M.R.C.S., L.D.S.; Mr. O. Coles, L.D.S.; Dr. Smith, Edinburgh; Mr. J. Tomes, F.R.S., F.R.C.S., L.D.S.; Mr. R. W. White, M.R.C.S., L.D.S.E., Norwich.

ANNUAL REPORTS.

The treasurer, Mr. J. Parkinson, stated that the financial condition of the Association was satisfactory.

The secretary, Mr. Canton, read his report and stated that the Association showed progress again in every respect.

Another Branch was formed and called the Central Counties.

During the year Wm. Robertson, of Edinburgh, had been

twice prosecuted for infringing the Dentists' Act. Alexander Ross French, of Dundee, was also prosecuted for infringing the Dentists' Act, and was convicted and fined £10. Three other persons, who were acting contrary to the Dentists' Act, were induced to discontinue doing so without legal proceedings being taken.

The number of members had increased by about 50.

A former member, expelled from the Association for advertising, had, by the influence of the Association, had his diploma [L.D.S.I.] withdrawn.

The Committee has been in communication with the General Medical Council, and have induced the Council to remove the name of Charles Rudolph Werner from the Dentists' Register, he having been convicted of fraud. Communication has also again taken place with the authorities concerning the formation of the jury lists.

After much discussion it was decided to hold the next annual meeting on August 19th, 20th, 21st, 1886, in London. Sir Edward Saunders was unanimously elected the next President elect.

THE REPRESENTATIVE BOARD.

The following gentlemen were elected to serve on the Representative Board:—Messrs. A. Woodhouse, Thos. Underwood, Storer Bennett, Claud Rogers, Morton Small, Charters White, London; J. R. Brownlin, Glasgow; R. F. H. King, Newark; W. Williamson, Aberdeen; Geo. Brunton, Leeds; Dr. Theodore Stack, Dublin.

VALEDICTORY ADDRESS.

The President, Dr. John Smith, then delivered the valedictory address.

VOTE OF THANKS TO THE PRESIDENT.

Mr. J. Tomes, F.R.S., proposed a special vote of thanks to the retiring President.

Sir E. Saunders said it afforded him very great pleasure to second the vote of thanks.

INAUGURAL ADDRESS.

Was delivered by Mr. Richard White.

PREHISTORIC DENTISTRY.

Dr. Waite then gave an exhibition of prehistoric dentistry. He stated that Dr. Van Martar, of Rome, had discovered some specimens of prehistoric dentistry supposed to be of the late of 600 B.C., near Civita Vecchia.

The specimens were then inspected by those present at the meeting.

The meeting then adjourned for luncheon.

AFTERNOON MEETING.

The Association re-assembled in the afternoon, when the President took the chair.

The afternoon was spent in the reading of papers having relation to matters connected with dentistry. The first paper read was by Mr. Spence Bate upon "*Excision versus Extraction*," and was the only one which provoked any discussion. The gentlemen who took part in the discussion were Mr. Charteris White, Mr. Blandy, Mr. Gordon Jones, Mr. Campbell, Mr. Hutchinson, Mr. Browlie, Mr. Headridge, Mr. Harding, Mr. Crapper, and Mr. Pedley. The other papers read were—by Mr. Storer Bennett on "*Farther Experiences with Herbst's Method of Gold Filling*;" by Dr. C. M. Cunningham on "*Cast Metal as a Base*;" by Mr. Oakley Coles on "*The Hopes and Fears of Dentistry*;" by Mr. Charteris White on "*Section Cutting of Dental Tissues*;" and by Mr. Hutchinson on "*The Necessity for Teeth after 50 years of age*."

SECOND DAY'S PROCEEDING.

DENTAL BENEVOLENT FUND.

The Secretary (Mr. Oakley Coles) read the annual report of the Dental Benevolent Fund :—

Nineteen cases had received assistance during the last year, including two girls and three boys who are being educated, and fourteen widows and others who are being helped.

The education and support of the children alone involves an outlay of nearly £100 per annum, and we have several cases that must be a charge upon your fund for as long as they live.

The number of applications is steadily increasing, and, in the nature of things, they must continue to increase.

The method of canvassing proposed by Mr. Harrison, the use of collecting cards, is a most self-denying one, as it involves a personal appeal to at least ninety-five per cent. of the entire profession, or about five thousand eight hundred people. Through the kindness of Messrs. Ash and Sons, 7,000 reports and appeals were sent out last autumn free of any cost to the Committee for distribution.

The balance-sheet was also read by Mr. Coles, and it showed that the receipts for 1884 had been £866, and the expenditure £140; that for 1885 up to June the receipts were £167, and the expenditure £157, the balance being invested.

THE SECRETARY'S RESIGNATION.

The President announced that Mr. Coles, the hon. Secretary, had tendered his resignation. Mr. Geo. Parkinson was appointed his successor in office.

CLINICS, DEMONSTRATIONS, &C.

The remainder of the meeting was occupied with clinics and demonstrations in the University Museums (Biological Laboratory). Many of the members of the Association visited the annual museum and exhibits of dental inventions and appliances which were placed in the University Museums. In the Laboratory, different methods of filling teeth with gold were shown by Messrs. Storer Bennett of London; Balkwill, of Plymouth; Cooke Parsons, of Clifton; J. J. Andrew, of Belfast; A. Jones, jun., of Cambridge; and—Fisher, of Dundee. Other dental operations were exhibited by Messrs. Pedley, of London;—Verrier, of Weymouth; Dr. Bogue, of New York; and Dr. Chas Cunningham, of Cambridge. A collection of models and pathological specimens contributed by various members of the profession was also displayed in the same room, together with an exhibition of instruments and appliances of all sorts sent by Messrs. Ash, the Dental Manufacturing Company, and other eminent makers.

ART EXHIBITION.

An Art Exhibition was held in which paintings, etc., by members of the profession were exhibited.

BRITISH DENTAL ASSOCIATION.

We are requested to announce that the annual meeting of the Central Branch of the British Dental Association will take place at 71, Newhall Street, under the presidency of Charles Sims, L.D.S., on Friday, Oct. 9th at two o'clock. Papers will be read and discussed. The dinner will take place at the Grand Hotel, Colmore Row, at 7 o'clock; tickets, 7s. 6d.

Arrangements will be made for visitors to inspect several of the important manufactories, public buildings, etc., on Saturday morning, Oct. 10th.

Gentlemen not members wishing to be present may obtain all particulars and dinner tickets from the Hon. Sec., 71, Newhall Street, Birmingham.

CORRIGENDUM.—In Dr. Buxton's paper upon "Emergencies of Anæsthetising," page 770, tenth line from top, the word "Barbican" has, by a printer's error, been substituted for "Rubicon."

British Journal of Dental Science.

DENTAL STUDENTS' SUPPLEMENT.

SEPTEMBER 15, 1885.

1. THE LICENSING CORPORATIONS.

COMPARATIVE SUMMARY OF REGULATIONS FOR THE LICENSE IN DENTAL SURGERY

	Royal College of Surgeons, England.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland. †	Faculty of Physicians and Surgeons, Glasgow.
1. PRELIMINARY EXAMINATION.....	Compulsory on all who commenced their Professional Education after July 22nd, 1878.	Compulsory on all who commenced their Professional Education after August 1st, 1878	Compulsory on all, except in the case of the modified Examination, <i>vide infra</i> .	Compulsory on all who commenced their Professional Education after August 1st, 1878
2. AGE at which the Candidate may present himself	Twenty-one	Twenty-one	Twenty-one.	Twenty-one
3. DURATION OF PROFESSIONAL EDUCATION.....	Four years	Four years	Four years.	Four years
4. COURSES OF LECTURES, &c., to be attended at a recognised School:	Two Courses or one Course and twenty Lectures on Head and Neck	One Winter Course	One course.	Two Courses, or one Course and 20 Lectures on Head and Neck

† Corrections not having been received from this College, its accuracy cannot be guaranteed.

	Royal College of Surgeons, England	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland	Faculty of Physicians and Surgeons Glasgow.
4. COURSES OF LECTURES, &c., (continued)— Physiology Surgery Medicine Chemistry Materia Medica Dissections and Demon- strations, or Dissections and Anatomy of Head and Neck Practical Chemistry and Metallurgy Practice of Surgery, and Clinical Lectures Dental Anatomy and Phy- siology Dental Surgery Dental Mechanics.....	One Course Ditto Ditto Ditto One Course Nine months One Course of each Two Winter Sessions Two Courses Ditto Ditto Three years under a com- petent Practitioner Two years £10 10s. over and above stamp duty Six months, subject to the de- cision of the Board	One Course of 50 Lectures One Winter Course Ditto Ditto One three months' Course Nine months Nine months One Course of 20 Lectures One three months' Course One six months' Course, or two three months' Courses One Course Ditto Ditto Three years under a Registered Dental Practitioner Two years £10 10s. Three months	One Course. Ditto None. One Course. Ditto. Two Courses. One Course Two Winter Sessions. None. Two Courses. Three years under a Registered Dental Li- centiate. Nine months. £10 10s. Six months.	One six months' Course Ditto Ditto Ditto One three months' Course Nine months One three months' Course One year's Twenty-four Lectures Twenty Lectures Twelve Lectures or Demon- strations Three years under a Registered Practitioner Two years £10 10s. Three months
Practice of Dental Surgery in a recognised Dental hospital, or in the Dental department of a recog- nised general hospital... 5. FEE.....				
6. LEAST period during which unsuccessful Can- didates are referred to their studies				

7. PARTICULARS OF EXAMINATION

- (A) *Written:*
On General Anatomy and Physiology
- General Pathology and Surgery (both with especial reference to Dental Practice)
- (B) *Oral:*
On all subjects in the Curriculum
Preparations, Casts, and Drawings
Fillings
Cases for Diagnosis, instruments, &c.

8. DATE OF EXAMINATION

February, June, and October

Written and Oral:
First Part—Anatomy, Physiology, Chemistry, and Metallurgy

Second Part—Surgery, Medicine, Materia Medica, and special Dental subjects

Dental subjects

First Part—1885
" Tuesday, October 6
1886 " January 26
" " " April 13
" " " July 13
Second Part—Following Thursday

Candidates must have been in Practice before August 1st, 1878, or apprenticed before August 1st, 1875

One of moral and professional character signed by two Registered Medical Practitioners

Written and Oral:
On all the subjects of the Curriculum

Preparations, Microscopes, and other appliances

July and October.

Candidates must be registered Dental Practitioners in practice, before 1878.

Certificates of moral and professional character signed by two Registered Medical Practitioners. Also, declaration by the Candidates that he does not advertise

Written, Oral, and Practical:
First Part—Anatomy, Physiology, Chemistry, and Metallurgy

Second Part—Surgery, Medicine, Materia Medica, and special Dental subjects

Practical Examination at Dental Hospital, Candidates are to bring Excavators, Files, and Plugging instruments

1885—October 13—15
1886—January 19—21
" April 22—24
" July 6—8

Candidates must be Registered Dental Practitioners in Practice before August 1878

Certificate of moral and professional character signed by two Registered Medical Practitioners. Also, declaration by the Candidates that he does not advertise

9. MODIFIED EXAMINATIONS *sine curricula:*
(a) Conditions of eligibility

Candidates must have been in Practice or have commenced Professional Education prior to September, 1875

(b) Certificates, &c. required

One of moral character signed by two members of the College or two Licentiates of the Licensing Bodies in the country where the education was received

4. MODIFIED EXAMINATIONS—(contd.):
(b). Certificates, &c., required (continued)

4. MODIFIED EXAMINATIONS—(contd.): (b). Certificates, &c., required (continued)	Royal College of Surgeons, England.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons, Glasgow.
	<p>Name Age Professional address Date of commencing Dental practice</p>	<p>Name in full Age Address Date of commencing Dental practice or apprenticeship and whether if in practice in conjunction with any other and what business</p> <p>Whether in possession of Degree or Diploma in Medicine or Surgery; if so, what and date</p>	<p>Name Age Address Date of commencing practice, and whether such practice has been carried on in conjunction with any other business, and if so with what business Professional status</p>	<p>Name Age Address Date of commencing practice Professional status</p>
(c) Manner of Examination Fee	<p>Particulars of Professional Education Same as ordinary Examination</p> <p>Ten guineas over and above stamp duty</p>	<p>Whether practising Dentistry in conjunction with any other business, and if so what</p> <p>Particulars of Professional Education Same as ordinary Examination</p>	<p>Particulars of Professional Education Same as ordinary Examination</p> <p>£21</p>	<p>Particulars of Professional Education Same as ordinary Examination</p>
For further information apply to Secretary	<p>EDWARD TRIMMER, Esq., Royal College of Surgeons Lincoln's Inn Fields, London, W.C.</p>	<p>JOSEPH BELL, Esq., F.R.C.S.E. 2, Melville Crescent, Edinburgh.</p>	<p>JOHN BRENNEN, Esq., Royal College of Surgeons, Dublin.</p>	<p>ALEX. DUNCAN, Esq., Faculty of Physicians and Surgeons, Glasgow.</p>

II. PRELIMINARY EDUCATION.

REGULATIONS OF GENERAL MEDICAL COUNCIL.

No person shall be allowed to be registered as a Medical or Dental Student unless he shall have previously passed a Preliminary Education in the subjects of General Education as specified in the following list :—*

1. English Language, including Grammar and Composition.†
2. English History.
3. Modern Geography.
4. Latin, including Translation from the original, and Grammar.
5. Elements of Mathematics, comprising (a) Arithmetic, including Vulgar and Decimal Fractions; (b) Algebra, including Simple Equations; (c) Geometry, including the first two Books of Euclid, or the subjects thereof.
6. Elementary Mechanics of Solids and Fluids, comprising the Elements of Statics, Dynamics, and Hydrostatics.†
7. One of the following Optional Subjects :—
(a) Greek; (b) French; (c) German; (d) Italian; (e) any other Modern Language; (f) Logic; (g) Botany; (h) Elementary Chemistry.

List of Examining Bodies whose Examinations fulfil the conditions of the Medical Council as regards preliminary education :—†

I. UNIVERSITIES IN THE UNITED KINGDOM.

UNIVERSITY OF OXFORD :—

1. Junior Local Examinations; Certificate to include Latin and Mathematics, and also one of the following optional subjects :—Greek, French, German, Natural Philosophy, including Mechanics, Hydrostatics, and Pneumatics.
2. Senior Local Examinations; Certificate to include Latin and Mathematics.
3. Responsions.
4. Moderations.
5. Examinations for a Degree in Arts.

UNIVERSITY OF CAMBRIDGE :—

6. Junior Local Examinations; Certificate to include Latin and Mathematics, and also one of the following optional subjects :—Greek, French, German, Natural Philosophy, including the Elements of Statics and Hydrostatics.

* The Examinations in General Education conducted by Universities will be accepted as heretofore, but if in any of these Examinations the subjects of Elementary Mechanics of Solids and Fluids are not included, the Candidate must pass in one or other of the remaining optional subjects instead, and a knowledge of Elementary Mechanics will be required at a subsequent Examination.

† “The General Medical Council will not consider any Examination in English Language sufficient that does not fully test the ability of the Candidate :—(1) To write sentences in correct English on a given theme, attention being paid to spelling and punctuation as well as to composition; —(2) to write correctly from dictation; —(3) to explain all the grammatical construction of sentences; —(4) to point out the grammatical errors in sentences ungrammatically composed, and to explain their nature; and (5) to give the derivation and definition of English words in common use.”

‡ “This subject may be passed either as preliminary, or before, or at the first Professional Examination.”

7. Senior Local Examinations ; Certificate to include Latin and Mathematics.
8. Higher Local Examinations.
9. Previous Examination.
10. Examination for a Degree in Arts.

UNIVERSITY OF DURHAM :—

11. Junior Local Examination ; Certificate to include Latin and Mathematics, and also one of the following optional subjects :—
Greek, French, German, Natural Philosophy, including Mechanics, Hydrostatics, and Pneumatics.
12. Senior Local Examinations ; Certificate to include Latin and Mathematics.
13. Registration Examination for Medical Students.
14. Examination for Students at the end of their first year.
15. Examination for a Degree in Arts.

UNIVERSITY OF LONDON :—

16. Matriculation Examination.
17. Preliminary Certificate (M.B.) Examination.
18. Examination for a Degree in Arts or Science.

UNIVERSITY OF EDINBURGH :—

19. Local Examination (Junior Certificate) ; Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects :—
Greek, French, German, Natural Philosophy.
20. Local Examinations (Senior Certificate) ; Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects :—
Greek, French, German, Natural Philosophy.
22. Preliminary Examination for Graduation in Science or Medicine and Surgery.
22. Examination for a Degree in Arts.

UNIVERSITY OF ABERDEEN :—

23. Local Examinations (Honours Certificate) ; Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin and also one of the following optional subjects :—
Greek, French, German, Natural Philosophy.
24. Preliminary Examination for Graduation in Medicine or Surgery.
25. Examination for a Degree in Arts.

UNIVERSITY OF GLASGOW :—

26. Local Examinations (Senior Certificate) ; Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following subjects :—
Greek, French, German, Natural Philosophy.
27. Preliminary Examination for Graduation in Medicine or Surgery.
28. Examination for a Degree in Arts.

UNIVERSITY OF ST. ANDREW'S :—

29. Local Examinations (Honours Certificate) ; Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following subjects :—
Greek, French, German, Natural Philosophy.
30. Preliminary Examination for Graduation in Medicine or Surgery.
31. Examination for a Degree in Arts.

UNIVERSITY OF DUBLIN :—

32. Public Entrance Examination.
33. Examination for a Degree in Arts.

QUEEN'S UNIVERSITY IN IRELAND :—

34. Local Examination for Men and Women ; Certificates to include all the subjects required by the General Medical Council.
35. Entrance or Matriculation Examination.
36. Previous Examination for B.A. Degree.
37. Examination for a Degree in Arts.

ROYAL UNIVERSITY OF IRELAND.

39. *Certificate, to include the following subjects :—
 - (a) Arithmetic, including Vulgar and Decimal Fractions.
 - (b) Algebra, including Simple Equations.
 - (c) Geometry, including the first two Books of Euclid.
 - (d) Latin, including Translation and Grammar.
 - (e) Also one of these optional subjects :—
 - Greek, French, German, Mechanical Division of Natural Philosophy.

VICTORIA UNIVERSITY :—

40. Preliminary Examination ; Latin to be one of the subjects.

II:—OTHER BODIES NAMED IN SCHEDULE (A) TO THE
“MEDICAL ACT.”

APOTHECARIES' SOCIETY OF LONDON :—

41. Examination in Arts.

ROYAL COLLEGE OF PHYSICIANS AND SURGEONS OF EDINBURGH :—

42. Preliminary (combined) Examination in General Education.

FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW :—

43. Preliminary Examination in General Education.

ROYAL COLLEGE OF SURGEONS IN IRELAND :—

44. Preliminary Examination ; Certificate to include Mathematics.

APOTHECARIES' HALL OF IRELAND :—

45. Preliminary Examination in General Education.

III.—EXAMINING BODIES IN THE UNITED KINGDOM NOT
INCLUDED IN SCHEDULE (A) TO THE “MEDICAL
ACT” (1858).

COLLEGE OF PRECEPTORS :—

46. Examination for a First Class Certificate, or Second Class Certificate of First or Second Division, Algebra, Geometry, Latin, and a Modern Language, having been taken.

EXAMINERS FOR COMMISSIONS AND APPOINTMENTS IN HER MAJESTY'S
SERVICE, MILITARY, NAVAL, AND CIVIL :—

47. Certificate to include all the subjects required.

INTERMEDIATE EDUCATION BOARD OF IRELAND :—

- | | |
|-------------------------------------|---|
| 48. Junior Grade Examination | } Certificates in each case
to include all the sub-
jects required. |
| 49. Middle “ “ “ “ “ “ | |
| 50. Senior “ “ “ “ “ “ | |

IV.—CERTAIN EXAMINATIONS OF INDIAN, COLONIAL, AND
FOREIGN UNIVERSITIES AND COLLEGES.

* The *English* is provided for by the following *Resolution*, passed by the Executive Committee on October 27th, 1876 (*Minutes*, Vol. XIII. p. 358) :—

“That as every candidate for the Certificate of the Oxford and Cambridge Schools' Examination Board is required to answer questions in such a manner as to satisfy the Examiners that he has an adequate knowledge of English Grammar and Orthography, this shall be held as conforming to the requirements of the Medical Council in reference to English Language.”

III. EDUCATIONAL BODIES.

LONDON.

DENTAL HOSPITAL OF LONDON AND LONDON
SCHOOL OF DENTAL SURGERY,
LEICESTER SQUARE.

HOSPITAL STAFF.

Consulting Physician—Sir J. RISDEN BENNETT, M.D., LL.D., F.R.S.*Consulting Surgeon*—CHRISTOPHER HEATH, F.R.C.S.*Consulting Dental Surgeons.*

SAMUEL CARTWRIGHT, F.R.C.S.

JOHN TOMES, F.R.S., F.R.C.S.

Dental Surgeons.

9 a.m.—Monday.....	DAVID HEPBURN, L.D.S.
„ Tuesday	R. H. WOODHOUSE, M.R.C.S., L.D.S.
„ Wednesday	GEORGE GREGSON, M.R.C.S., L.D.S.
„ Thursday	STORER BENNETT, L.R.C.P., F.R.C.S., L.D.S.
„ Friday	HENRY MOON, M.R.C.S., L.D.S.
„ Saturday	F. CANTON, L.R.C.P., M.R.C.S., L.D.S.

Assistant Dental Surgeons.

„ Monday.....	W. HERN, M.R.C.S., L.D.S.
„ Tuesday	ARTHUR S. UNDERWOOD, M.R.C.S., L.D.S.
„ Wednesday	CLAUDE ROGERS, M.R.C.S., L.D.S., D.D.S., U.S.
„ Thursday	GEO. PARKINSON, M.R.C.S., L.D.S.
„ Friday	LAWRENCE READ, L.D.S.
„ Saturday	C. E. TRUMAN, M.R.C.S., L.D.S., M.A.

Administrators of Chloroform.

9.30 a.m.—Monday and Saturday...	G. H. BAILEY, M.R.C.S.
„ Tuesday and Friday ...	T. BIRD, M.A., M.R.C.S.
„ Wednesday.....	J. MILLS, M.R.C.S.
„ Thursday	F. WOODHOUSE BRAINE, F.R.C.S.

Demonstrators.

W. R. ACKLAND, L.D.S.

E. LATCHMORE, L.D.S.

Medical Tutor—W. PATERSON, F.R.C.S., L.D.S.*House Surgeon*—VIPONT CROCKER, L.D.S.*Assistant House Surgeon*—LLOYD WILLIAMS, L.D.S.

Demonstrations—The Medical Officers will make every effort to give Demonstrations to the junior pupils on cases selected from time to time, every morning during the Lecture Season ; and at the end of the Course those gentlemen who have attended the Demonstrations to the satisfaction of the Medical Officers will be permitted to perform operations at the Hospital under the supervision of the Medical Officers and the House Surgeon,

Dresserships for Cases of Extraction—These appointments are held for two months, and consist of six Senior Dresserships for extractions under anaesthetics, and eighteen Junior Dresserships for ordinary extractions.

The Senior Dressers will be selected from those pupils only who have entered fully both to the practice and lectures of this Hospital, and also to the Course required by the College of Surgeons for the Licence in Dental Surgery at one of the general Hospitals

MEDICAL SCHOOL.

The WINTER SESSION will commence on Thursday, Oct. 1st, 1885.

The SUMMER SESSION will commence in May, 1886.

LECTURES.

Dental Surgery and Pathology, by F. J. HUTCHINSON, M.R.C.S., L.D.S.

Dental Anatomy and Physiology (Human and Comparative), by ARTHUR UNDERWOOD, M.R.C.S., L.D.S.

MEDICAL TUTOR.

The Medical Tutor attends on four days in the week, from 5 to 7 p.m., for two months previous to two of the Annual Examinations. His classes are open to all Students, and are intended to assist those who are preparing for their examinations at the College of Surgeons, generally speaking, to guide and direct the studies of the pupils, and prepare them in the subjects for the Examinations.

FEES.

GENERAL FEE FOR THE SPECIAL LECTURES REQUIRED BY THE CURRICULUM,

Viz., two Courses on Dental Anatomy, two Courses on Dental Surgery two Courses on Mechanical Dentistry, and one Course of Metallurgy, £15 15s.

Fee for the Two Years' Practice of the Hospital required by the Curriculum, £15 15s.

Total Fee for the Special Lectures and Hospital Practice required by the Curriculum, £31 10s.

Students who perform Operations for Filling Teeth must provide their own Instruments for the same.

Additional Fees for a General Hospital for the two years, to fulfil the requirements of the Curriculum, vary from £40 to £50.

PRIZES.

The Prize-day will in future be held in July.

1. Prizes are awarded by the Lecturers for the best examinations in the subjects of their respective courses, at the end of the Summer and Winter Sessions.

2. Arrangements have been made for a prize in Operative Dentistry, in the competition for which each candidate is entrusted with the care of a mouth, which he shall, if not impracticable, set thoroughly in order.

3. A prize of the value of five guineas is also given by Messrs. Ash and Sons for the best essay on a surgical subject connected with the mouth.

4. A scholarship of the value of £20 has been founded by Sir Edwin Saunders, and will be awarded to the Student who has obtained the largest number of First Class Prizes during the Winter and Summer Sessions preceding the July in which the award takes place.

Note.—The Medical Committee have resolved "that the holder of the Saunders' Scholarship be admitted without additional fee to an extra year of hospital practice."

The Dean requests that all Communications relating to the Medical School may be addressed to him at the Hospital, where he will attend in the afternoons, from Sept. 26th to Oct. 1st., inclusive, from 5 till 5.30 o'clock, or on Wednesday mornings from 10.30 till 12.

MORTON SMALE, M.R.C.S., L.D.S., L.S.A., *Dean.*

NATIONAL DENTAL HOSPITAL AND COLLEGE GREAT PORTLAND STREET, W.

HOSPITAL STAFF.

Consulting Physicians.

B. W. RICHARDSON, M.A., M.D., F.R.S.,
W. H. BROADBENT, M.D., F.R.C.P.

Consulting Surgeons.

PROFESSOR ERICHSEN, F.R.S. SIR SPENCER WELLS, BART., F.R.C.S.

CHRISTOPHER HEATH, F.R.C.S.

Consulting Dental Surgeon.

J. MERRYWEATHER, M.R.C.S.

Dental Surgeons.

Monday	...	...	F. HENRY WEISS, L.D.S., Eng.
Tuesday	...	...	ALFRED SMITH, L.D.S., Eng.
Wednesday	...	...	G. A. WILLIAMS, L.D.S., Eng.
Thursday	...	...	A. F. CANTON, L.D.S., Eng.
Friday	...	...	THOMAS GADDES, L.D.S., Eng. & Edin.
Saturday	...	...	HARRY ROSE, L.D.S., Eng.

Assistant Dental Surgeons.

Monday	...	...	WILLOUGHBY WEISS, L.D.S., Eng.
Tuesday	...	...	R. G. BRADSHAW, L.D.S., Eng.
Wednesday	...	...	MARCUS DAVIS, L.D.S., Eng.
Thursday	...	...	H. G. READ, L.D.S., Eng.
Friday	...	...
Saturday	...	...	W. R. HUMBY, L.D.S. Eng.

House Surgeon—I. PRAGER, L.D.S.I.

Assistant House Surgeon—Mr. F. WRIGHT.

Anæsthetists.

F. W. HEWITT, B.A., M.B., &c.
C. W. GLASSINGTON, M.R.C.S., L.D.S., Edin.
W. TYRRELL, L.R.C.P., M.R.C.S.
HENRY F. WINSLOW, M.D., Lond., &c.

LECTURERS.

<i>Dental Anatomy and Physiology</i>	...	THOMAS GADDES, L.D.S., Eng. & Edin.
<i>Dental Surgery and Pathology</i>	...	WILLOUGHBY WEISS, L.D.S., Eng.
<i>Dental Mechanics</i>	...	HARRY ROSE, L.D.S., Eng.
<i>Dental Metallurgy</i>	...	ALFRED TRIBE, F.C.S., Fell, Inst, Chem.
<i>Operative Dental Surgery</i>	...	W. ST. GEORGE ELLIOTT, M.D., D.D.S.
<i>Dental Materia Medica</i>	...	CHAS. GLASSINGTON, M.R.C.S., L.D.S., Edin.
<i>Elements of Histology</i>	...	THOMAS GADDES, L.D.S., Eng. & Edin.
<i>Demonstrator of Dental Mechanics</i>	...	W. R. HUMBY, L.D.S., Eng.
<i>Arts and Literature</i>	...	Rev. Dr. H. R. BELCHER, M.A.

The hospital is open for the reception of patients every week-day from 9 o'clock till 11 o'clock a.m. The House Surgeon attends daily from 9 a.m. till 2 o'clock p.m.

Dresserships in the Extraction Room.

These appointments are held for three months by six senior and six junior students of the hospital. The respective dressers for each day are required to be in attendance from 9 o'clock till the conclusion of the practice; and they will be under the direction of the Dental Surgeon of the day, and of the House Surgeon.

Clinical Lectures and Demonstrations.

Each medical officer will give clinical lectures, when opportune, during the ensuing year. Clinical lectures will also be given from time to time on cases of special interest; and also demonstrations upon the preparing and filling of cavities, and other operations upon the teeth and contiguous parts.

Attendance and Examination of Students.

A register is kept of the attendance of students at the hospital practice and lectures. An attendance of full two years at hospital practice is required by the College of Surgeons of England; and no schedule will be signed for any lectures of which less than two-thirds have been attended. Class examinations are held frequently during the several courses to test the progress and attention of the pupils; and at the end of each course of lectures a written examination is held. An insufficient attendance at lectures disqualifies the student for receiving any prize of that year.

Tutorial classes are held to prepare for the final examinations students who have, at this school, complied with the Dental portions of the Curriculum.

LECTURES.

WINTER SESSION, COMMENCING ON THURSDAY, OCT., 1st, 1885.

Dental Anatomy and Physiology, by Thomas Gaddes, L.D.S., Eng., and Edin. On Tuesdays and Thursdays at 7 p.m. during October, November, and December.

Operative Dental Surgery, by W. St. George Elliot, M.D., D.D.S. On Wednesdays, at 7.30 p.m., during November and December. (Free to students of the hospital and college).

Dental Materia Medica and Therapeutics, by Chas. W. Glassington, M.R.C.S., L.D.S., Edin., on Mondays at 7 p.m., during Nov. & Dec. (Free to students of the college).

Dental Metallurgy, by Alfred Tribe, F.C.S. On Tuesdays at 9 a.m., during January, February, and March.

Dental Mechanics, by Harry Rose, L.D.S., Eng. On Mondays at 7 p.m. during January, February, and March.

Demonstrations on Dental Mechanics, by W. Robinson Humby, L.D.S., Eng. On Wednesdays at 7 p.m., during January, February and March. (Free to students of the college).

SUMMER SESSION, 1886.

Dental Surgery and Pathology.

On Mondays and Thursdays at 6 p.m., during May, June, and July.

Elements of Histology, by Thomas Gaddes, L.D.S., Eng. and Edin. On Wednesdays and Fridays at 7 p.m., during May and June. (Free to students of the college).

Arts and Literature Class, conducted by the Rev. H. R. Belcher, LL.D. M.A. The arrangements and fees for this Class will vary according to the requirements of the students entering.

FEES.

GENERAL FEE FOR SPECIAL LECTURES REQUIRED BY THE CURRICULUM OF THE ROYAL COLLEGE OF SURGEONS IN ENGLAND. £12 12s.

Fees to Single Courses	One Course.	Two Courses.
Dental Anatomy and Physiology	£2 12 6 ...	£4 4 0
Dental Surgery and Pathology	2 12 6 ...	4 4 0
Dental Mechanics	2 12 6 ...	4 4 0
Dental Metallurgy	3 3 0 ...	5 5 0
*Operative Dental Surgery	2 2 0 ...	
*Dental Materia Medica	2 2 0 ...	
*Elements of Histology	1 1 0 ...	
*Demonstrations on Dental Mechanics ...	1 1 0 ...	

Hospital Practice to Registered Practitioners (six months), £7 7s.
Ditto (twelve months) £9 9s.

Fee for the two years' Hospital Practice required by the Curriculum £12 12s.

* These lectures are free to students of the college who have fully entered for the Special Lectures.

Total Fee for the Special Lectures and Hospital Practice required by the Curriculum, £25 4s.

PRIZES.

Five Prizes, in Medals, are open for competition among the Students of the College at the end of each Course of Lectures on the following subjects, viz.: Dental Anatomy, Dental Surgery, Dental Mechanics, Metallurgy, and Operative Dental Surgery. A prize will also be given for Dental Materia Medica.

Certificates of Honour will be awarded to those Students who show superior proficiency in any of the classes.

The *Rhymer Gold Medal for General Proficiency*, value £5, will be awarded annually to the most distinguished Student of the year. His general conduct and attendance must have been in every respect satisfactory. At the time of the special examination for the Rhymer Medal the Student must not hold any qualification. The Medal will be awarded on the understanding that the Student completes the Dental curriculum.

The Public Distribution of Prizes will take place at the commencement of the Summer Session.

THOMAS GADDES, *Dean*.

EDINBURGH.

DENTAL HOSPITAL AND SCHOOLS.

Consulting Physician—ALEX. PEDDIE, M.D., F.R.C.P.E.

Consulting Surgeon—JOSEPH BELL, F.R.C.S.E.

Consulting Surgeon Dentist—Dr. JOHN SMITH, F.R.C.S.E.

Dental Surgeons.

CHARLES MATTHEW, L.D.S., Edin.

WILLIAM BOWMAN MACLEOD, L.D.S.
Edin.

MATTHEW FINLAYSON, L.D.S. Edin.

ANDREW WILSON, L.D.S., Edin.

GEORGE W. WATSON, L.D.S.,
Edin.

MALCOLM MACGREGOR, L.D.S.,
Edin.

Assistant Dental Surgeons.

J. S. AMOORE, L.D.S., Eng.

J. STEWART DURWARD, L.D.S., Edin.

J. GRAHAM MUNRO, L.D.S., Edin.

JAMES MACKINTOSH.

J. LINDSAY, L.D.S., Edin.

W. FORRESTER.

Honorary Treasurer and Dean.

WM. BOWMAN MACLEOD, L.D.S., 43, George Square.

DENTAL SCHOOL.

LECTURES.

Dental Anatomy and Physiology (Human and Comparative) by ANDREW WILSON, L.D.S. (Edin.).—These Lectures will be delivered on the evenings of Tuesday and Friday, at 8 o'clock, commencing on 3rd November, 1885. The Course consisting of twenty-four Lectures will be illustrated by preparations, models, diagrams, microscopical specimens, etc.

Dental Surgery and Pathology, by GEORGE W. WATSON, L.D.S. (Edin.).—These Lectures will be delivered on the evenings of Tuesday and Friday at 8 o'clock, during the Summer Session, commencing 4th May, 1886. The Course, consisting of twenty Lectures, will be illustrated by preparations, models, diagrams, microscopical preparations, etc.

Mechanical Dentistry, by W. BOWMAN MACLEOD, L.D.S. (Edin.).—The Lectures will commence on 4th November, 1885, at 8 p.m., and be continued every Wednesday thereafter till the Course of at least twelve Lectures is concluded.

Practical Mechanics—Assistant Demonstrator, J. STEWART DURWARD, L.D.S. (Edin.).—In addition to the Systematic Lectures there will be given during the Session, Demonstrations on Dental Mechanics, and each Student

will be expected to prepare the mouth, take the impression, make the denture, and insert the same in at least four cases. The Demonstrations will be spread over the two years of Hospital practice, and will be given as occasion serves. Students will require to furnish their own hand tools.

In the various classes prizes will be offered for competition.

General Fee for the Hospital Practice and Special Lectures required by the Curriculum.—Hospital Practice, £15 15s. One Course each of Dental Anatomy, Dental Surgery, and Mechanical Dentistry and Demonstrations, £9 15s—£25 10s.

Fees to Separate Classes.—Dental Anatomy, Dental Surgery, Mechanical Dentistry, £3 5s each.

The Hospital Practice and Lectures qualify for the Dental Diploma of the Royal College of Surgeons, Edinburgh, and also for that of the other Licensing Bodies. Second Courses of the Lectures, as required by the Royal College of Surgeons of England, £2 4s

For further information apply to the Dean, who will be found at the Hospital every Wednesday morning between 9 and 10 o'clock.

THE SESSION 1885-6 OPENS NOVEMBER 1ST, 1885.

General Fee for the Hospital Practice and Special Lectures required by the Curriculum.

Hospital Practice, Two Years.....	£15 15 0
One Course, of not less than 24 Lectures in Dental Anatomy ...	} 9 15 0
" " 20 " Surgery ...	
" " 12 " Mechanics ...	
Total.....	£25 10 0

For further particulars, apply to the Dean, 30, Chambers Street, Edinburgh

GLASGOW.

DENTAL HOSPITAL AND SCHOOL, ANDERSON'S COLLEGE.

Hon. Consulting Physician—PROFESSOR QERNEUIL.

Hon. Consulting Surgeon.—PROFESSOR MORTON, M.D., &c.;

Chloroformist—WILLIAM MUIR, M.B., C.M.

Dental Surgeons.

JAMES CUMMING, L.D.S.F.P.S.G.

W. S. WOODBURN, L.S.D., F.P.S.G.

JOHN FOULDS, L.D.S.F.P.S.G.

JOHN AUSTIN BIGGS.

J. R. BROWNLIE, L.D.S.M.R.C.S.

Eng.

DAVID TAYLOR, M.D., L.D.S.

Assistant Dental Surgeons.

A. B. YOUNG, L.D.S.

W. M. ADAMSON, L.D.S.

W. F. MARTIN, L.D.S.

D. R. CAMERON, L.D.S.

J. M. MCCASH, L.D.S.

B. SUTHERLAND.

Dental House Surgeon—

The Hospital is open daily, except Sunday, at 5 p.m. till 7 p.m. Anæsthetics administered, when required, at 9 a.m.

The work of the Hospital is conducted, as far as possible, by the Students, under the supervision of the Dental Officer of the day. Cases of special interest will be made the subject of clinical instruction or demonstration as they occur.

The practice of the Hospital may be entered upon at any time during the Session, and attendance dated therefrom. Fee for the two years' practice required by the curriculum, £10 10s. Fee for each course of Lectures, £2 2s.

The Dental Students' Society meets once a month in the Committee Room of the Hospital, when papers on subjects of interest are read and discussed by the Members.

DENTAL SCHOOL.

Secretary to the Dental Lectures—DAVID TAYLOR, M.D., L.D.S., Glas., Dental Anatomy and Physiology, Human and Comparative, by DAVID TAYLOR, M.D., L.D.S., Glas.

The Lectures will be delivered in the Summer Session, on the Mornings of Wednesday and Friday, at 8 a.m., and will be illustrated by Diagrams, Preparations, and Microscopic Specimens. Text-book—Tomes Manual of Dental Anatomy, Human and Comparative.

Dental Surgery and Pathology, by JAMES RANKIN BROWNLIE, L.D.S., Eng. These Lectures are delivered on Tuesdays and Thursdays, during the months of May and June, at 8 a.m., and will be illustrated by recent Specimens, and other Preparations, and Drawings, &c. Text-books—Tomes's Manual of Dental Surgery; Salter's Dental Pathology and Surgery; Harris's Principles and Practice of Dentistry.

Mechanical Dentistry, by W. S. WOODBURN, L.D.S., Glas.

This Course will commence on the first Thursday of October, at 8 o'clock p.m., and will consist of 12 Lectures, with Practical Demonstrations in Dental Laboratory.

All communications on matters relating to the Dental School, should be addressed to DR. DAVID TAYLOR, 144, Wellington Street, Glasgow, who will forward detailed Prospectus of the School.

BIRMINGHAM.

BIRMINGHAM SCHOOL OF DENTISTRY, QUEEN'S COLLEGE.

The teaching of Dentistry is now undertaken by the Queen's College, acting in association with the Birmingham Dental Hospital, and the Birmingham Clinical Board, so that students may fully qualify themselves for the Dental Diplomas of the Royal Colleges.

The Dental Hospital is situated near the College, and is open daily (Sundays excepted). The number of patients treated there during the past year was upwards of

The General and Queen's Hospitals offer every advantage for the study of General Surgery and Medicine, the arrangements for which are carried out under the direction of the Birmingham Clinical Board.

LECTURES FOR THE DENTAL CURRICULUM.

WINTER SESSION.

Special Subjects.

Dental Anatomy and Physiology.—F. ROBERT BATCHELOR, L.D.S.I., Dental Surgeon to the Dental Hospital. Thursdays, at 5 p.m.

Dental Surgery and Pathology.—C. SIMS, L.D.S., Eng. Fridays, at 5 p.m.

Dental Metallurgy.—W. A. TILDEN, D.Sc., F.R.S. N.B.—This Class will be held at Mason's College. About ten lectures on this subject will be given on Tuesdays at 2.30 p.m., from October to Christmas.

General Subjects.

Anatomy, Practical Anatomy, Physiology, Chemistry, Medicine, Surgery. These Classes are similar to those in the Medical Department.

SUMMER SESSION.

Special Subjects.

Dental Mechanics.—W. ELLIOTT, L.D., Edin., & Dub. F.C.S., Assistant Surgeon to the Dental Hospital. Wednesdays, at 5 p.m.

General Subjects.

Materia Medica and Therapeutics.—*Practical Chemistry.*—These Classes are similar to those in the Medical Department.

FEES.

A Composition Fee of 60 guineas, payable in one sum, or in two sums, viz., 40 guineas at the beginning of the first year, and 20 guineas at the beginning of the second year of studentship, admits to the full curriculum required for the Dental Diploma (inclusive of the necessary Hospital Practice.

N.B.—Further particulars may be obtained on application to the Warden at the College, or to Mr. Charles Sims, at 51, Union Passage, Birmingham

DENTAL HOSPITAL, 71, NEWHALL STREET.

Open daily at 9 a.m.

Consulting Surgeon.—FURNEAUX JORDAN, F.R.C.S., Senior Surgeon to the Queen's Hospital.*Consulting Dentists.*

THOMAS R. ENGLISH.

ADAMS PARKER, L.D.S., Eng.

Administrators of Anæsthetics.

J. W. MOORE, M.R.C.S.

J. C. HUXLEY, M.B.

J. S. GREEN, M.R.C.S., L.S.A.

J. CLARKE, M.R.C.S.

GRINDING, M. B.

WRIGHT WILSON, F.R.C.S., Eng.

*Dental Surgeons.**Days of Attendance*

CHARLES SIMS, L.D.S., R.C.S., Eng.....Wednesdays,

H. BREWARD NEALE, L.D.S., R.C.S.I.....Thursdays.

F. R. BATCHELOR, L.D.S., R.C.S.I.....Fridays.

E. E. HUXLEY, M.R.C.S., L.D.S.....Saturdays.

J. HUMPHREYS, L.D.S.I.....Mondays.

F. W. RICHARDS, L.D.S.....Tuesdays.

Assistant Dental Surgeons.

DEMONSTRATIONS.

Clinical Demonstrations will be given from time to time by the Staff on cases of particular interest; also upon the Preparing and Filling of Cavities, and other operations upon the teeth and contiguous structures.

DRESSERSHIPS IN THE EXTRACTION ROOM.

These appointments are held for three months by senior and junior Students of the Hospital. The respective dressers for each day are required to be in attendance from 9 o'clock to the conclusion of the practice; and they will be under the direction of the Dental Surgeon in attendance.

Dental Hospital Practice :

If taken separately, 2 years.....£14 14 0

" " 1 year 8 8 0

" " 6 months... 5 5 0

For further information connected with the Hospital apply to the Hon. Secretary, Frank E. Huxley, Esq., 23, Waterloo Street, with whom Students are required to register their names for Hospital Practice.

DENTAL HOSPITAL OF IRELAND.

29, YORK STREET, DUBLIN.

The WINTER SESSION will commence Monday, October 5th, 1885.

The SUMMER SESSION will commence in May, 1886.

Consulting Physicians—ROBERT D. LYONS, M.D., M.P.; JOHN W. MOORE, M.D.

Consulting Surgeons—D. H. BENNETT, F.R.C.S.I.; WILLIAM STOKES, F.R.C.S.I.

Consulting Dental Surgeons—R. H. MOORE, F.R.C.S.I.; DANIEL CORBETT, M.R.C.S.E.

Dental Surgeons—JOHN A. BAKER,

F.R.C.S.I.; R. THEODORE STACK, F.R.C.S.I., D.M.D. (Harv.); A. W. W. BAKER, M.B., Ch.M., L.D.S.; DANIEL CORBETT, JUN., F.R.C.S.I.

Demonstrator—G. W. YEATES, M.B., Ch.M., L.D.S.

Pathologist—PHIN. S. ABRAHAM, F.R.C.S.I.

Registrar—WILLIAM A. SHEA.

In connection with the Dental Hospital of Ireland, the Dental School will be open for the Winter Session on October 5th, 1885.

All Dental Students who have passed their Preliminary Examination are admissible to the Clinical Instruction of the Hospital, after paying Fees and subscribing to the conditions prescribed by the Staff.

In addition to Clinical Instruction, Courses of Lectures will be given through the year on Dental Surgery, Dental Anatomy, Mechanical Dentistry and Metallurgy by the following Lecturers:—Dental Surgery: A. W. W. Baker, M.B., Ch.M. Dental Anatomy: Daniel Corbett, Jun., A.B., F.R.C.S.I. Mechanical Dentistry: R. Theodore Stack, M.D., F.R.C.S.I., D.M.D., Professor of Dentistry, Royal College of Surgeons. Metallurgy: Charles Cameron, M.D., F.R.C.S.I., Professor of Chemistry, Royal College of Surgeons.

These lectures are intended to supplement the lectures given in the Medical Schools, and give to the Dental Student in Ireland the opportunity of fulfilling in his own country the conditions of curriculum required by the different licensing bodies in the United Kingdom.

The lectures on Mechanical Dentistry and Metallurgy will be given during the winter; those on Dental Surgery and Anatomy during the summer months. In addition to the longer courses, special courses, of three month's duration, will be given to Surgeons about to join the Army and Navy, or to practice in the Colonies.

Amongst the advantages of the School is the Mechanical Laboratory where each Student is allotted his own bench, and every effort is made to assist him in Mechanical Dentistry. This year, in addition to practical instruction in the details of Gold, Dental Alloy, Vulcanite, Celluloid, and continuous Gum Work, special demonstrations will be given in the Mechanical treatment of Cleft Palate, by Mr. Theodore Stack; in the Treatment of Dental Irregularities, by Mr. A. W. W. Baker; and in the various methods of inserting Pivot Teeth, by Mr. Daniel Corbett, Jun.

Regulations as to Fees and other conditions are the same as exist at the Dental Hospital of London, Leicester Square. Any further information can be obtained from Mr. William Sheda, Registrar of the hospital, or

R. THEODORE STACK, Dean.

MANCHESTER.

THE VICTORIA DENTAL HOSPITAL OF MANCHESTER.

98, GROSVENOR STREET, ALL SAINTS'.

The Hospital is open every morning (Sundays excepted), and on Monday, Wednesday, and Friday evenings. Patients admitted from 8 to 9.30 in the morning, and from 6.30 to 7.30 in the evening.

Hon. Treasurer.
F. W. TRAVERS.

Hon. Secretary.
HENRY L. KNOOP.

Consulting Physicians.

Dr. WM. ROBERTS, F.R.C.P.
Dr. SIMPSON, M.R.C.S.

Dr. MORGAN, F.R.C.P.
Dr. LEECH, F.R.C.P.

Dr. D. LLOYD ROBERTS, F.R.C.P.

Consulting Surgeons.

E. LUND, F.R.C.S.
E. A. HEATH, M.R.C.S.

W. WHITEHEAD, F.R.C.S.
T. JONES, F.R.C.S.

J. HARDIE, F.R.C.S.

Consulting Dental Surgeons.

H. CAMPION, M.R.C.S.
S. A. ROGERS, L.D.S., Eng.

PARSONS SHAW, D.D.S.
G. W. SMITH, M.R.C.S. & L.D.S.
Eng.

Dental Surgeons.

P. BETTS, D.D.S.	H. A. MANN.
T. BUCKLEY, L.D.S., I.	L. MATHESON, L.D.S., Eng.
G. CROCKER, L.D.S., Glasgow.	J. H. MOLLOY, L.D.S., I.
L. DRESCHFELD, L.D.S., I.	H. PLANCK, L.D.S., I.
J. W. DUNKERLEY.	J. RENSHAW, L.D.S., I.
W. DYKES, L.D.S., Glasgow.	G. N. SKIPP, L.D.S., Eng.
W. HEADRIDGE, L.D.S., I.	H. C. SMALE, L.D.S., Eng.
T. TANNER, L.D.S., Eng.	W. SMITHARD, L.D.S., I.
JOS. WILLIAMS, L.D.S., I.	

Administrator of Anæsthetics.

J. J. KENT FAIRCLOUGH, M.D., M.R.C.P.

Warden.

PARSONS SHAW, D.D.S.

WINTER SESSION, 1885-6.

Anatomy and Dissections

Physiology

Medicine

Surgery

Chemistry

Dental Mechanics

SUMMER SESSION, 1886.

Materia Medica

Practical Chemistry

Dental Anatomy and Physiology

„ Surgery

Metallurgy.

The Summer session commences on the 1st May, the Winter session on the 1st October.

The arrangements of the next Winter session are open to modification.

This hospital was recognised by the Royal College of Surgeons of England in November, 1884.

The Fee for the two years' Hospital Practice is £12 12s.

For further information apply to the Hon. Secretary.

LIVERPOOL.

DENTAL HOSPITAL, MOUNT PLEASANT.

NORTHERN BRANCH—15, GREAT MERSEY STREET.

Consulting Physician—THOMAS ROBINSON GLYNN, M.D., M.R.C.P., Lond.

Consulting Surgeon—FRANK T. PAUL, F.R.C.S.

Consulting Dental Surgeons.

W. J. NEWMAN, L.D.S.I.

R. E. STEWART, L.D.S., Eng.

Dental Surgeons.

THOMAS F. AUSTIN.

J. N. P. NEWTON, L.D.S., Eng., D.D.S.

W. H. WAITE, D.D.S., L.D.S.I.

FREDERICK ROSE, L.D.S., Eng.

D. DOPSON, L.D.S.I.

CHARLET ALDER, L.D.S.I.

Assistant Dental Surgeons.

CHAS. T. STEWART.

E. A. COUNCELL, L.D.S., Eng.

Honorary Assistant Dental Surgeons.

M. ALEXANDER.

R. M. CAPON, L.D.S.

E. A. DAVIS, R.C.S.I.

W. H. STEWART, L.D.S., R.C.S.I.

Hon. Demonstrator of Operative Dental Surgery—

THOMAS MANSELL, R.C.S., Edin.

*Assistant Dental Surgeon at Northern Branch—*C.B. DOPSON, R.C.S.I.

This Hospital is a School of Practical Dental Surgery duly recognised by the Royal College of Surgeons and open to all Students of Dentistry, under such regulations as shall be determined by the Committee of Management.

The Hospital is open daily for the admission of patients from 8.30 till 10 a.m., and from 5.30 to 8 p.m., Northern Branch open 9 to 10 a.m., and 6 to 7 p.m.

Fees for Hospital Practice £5 5s. per annum, or a composition fee of £8 8s. for the two years Hospital Practice, required for the curriculum to Students of the Medical Faculty, University College, Liverpool, and pupils or apprentices of registered Dentists.

Further information may be obtained by applying to the Honorary Secretary, W. L. JACKSON, C, Queen Insurance Buildings, 10, Dale Street.

PLYMOUTH.

DENTAL DISPENSARY, OCTAGON.

*Physician—*C. ALBERT HINGSTON, M.D. Lond.*Surgeons.*

CHRISTOPHER BULTEEL, F.R.C.S.

CONNELL WHIPPEL, M.R.C.S.

*Consulting Dentist—*F. A. JEWERS, M.D.S.*Dental Surgeons.*

W. V. MOORE, L.D.S., Eng.

ERNEST E. JEWERS, L.D.S., Eng.

C. SPENCE BATE, F.R.S., L.D.S., Eng.

ERNEST EDWARD JEWERS, L.D.S.E.

FRANCIS H. BALKWILL, L.D.S., Eng.

HENRY WILLIAM MAYNE, L.D.S.I.

*Treasurer—*ALFRED PAYNE BALKWILL.

The Dentists attend each day at 9 a.m. except Sundays.

DENTAL SCHOOL.

Certificates of attendance on the practice of this Dental Dispensary are recognised by the College of Surgeons as qualifying for the Diploma in Dental Surgery. The College also recognises the lectures delivered at the Dispensary.

Pupils of any of the Dental Surgeons of the Plymouth Dental Dispensary, or other Dentists holding a Diploma of the College of Surgeons, or Member of the Odontological Society may attend the Dispensary on the day of such practitioner as may agree to accept such pupil, or pupils on the payment of £1 1s. per annum to the Institution.

LECTURES.

On "Dental Physiology," by C. SPENCE BATE, F.R.S., L.D.S., R.C.S.E.

On "Dental Anatomy," by F. H. BALKWILL, L.D.S., R.C.S.E.

Fee to Lectures, one Course, £7 7s.

Fee to Lectures, double Course, £12 12s. (required for Diploma).

Fee to Dental Practice at Dispensary, £5 5s. per annum.

Fee to entire Dental Curriculum (required for Diploma), 22 Guineas.

Further information may be obtained from the Secretary, Mr. E. G. BENNETT, at above address.

EXETER.

DENTAL HOSPITAL.

Consulting Surgeons.

A. J. CUMMING, F.R.C.S., Eng.

WILLIAM CLAPP, F.R.C.S. Eng.

Surgeon Administrator of Anæsthetics—W. A. BUDD, M.R.C.S. Eng.*Dental Surgeons.*

J. T. BROWNE-MASON, L.D.S. Eng.

T. G. T. GARLAND, L.D.S.I.

S. BEVAN FOX, L.D.S. Eng.

J. M. ACKLAND, M.R.C.S., L.D.S.,

HENRY BIGING MASON, L.D.S., Eng.

Eng.

Hon. Sec.—HENRY B. MASON.

Attendance on the practice of this hospital is recognised by the Royal College of Surgeons of England as qualifying for their Dental diploma.

The hospital is open daily (Sundays excepted), and patients are admitted between the hours of 9 and 11 a.m.

Pupils of any member of the staff, or other registered practitioner (being a Life or Annual Governor), are permitted to attend the practice of the hospital, subject to the approval of the Medical Sub-Committee, on payment of Five Guineas annually to the Funds of the Institution. Students attending the practice of the hospital must consider themselves strictly under the control of the Medical Officers, and must not undertake any operation without the consent of the Dental Surgeon for the day.

Number of cases treated in 1884, 5,355.

PRIVATE SCHOOL OF ANATOMY, PHYSIOLOGY
SURGERY, ETC.

Demonstrations and lectures by Mr. Thomas Cooke, F.R.C.S., senior Assistant Surgeon to the Westminster Hospital.

This school of anatomy, physiology, surgery, etc., meets the requirements of three classes of students, *i.e.*:

I. Qualified Practitioners and Advanced Students, *i.e.*, gentlemen wishing either to obtain some of the Higher Qualifications, or to compete for Appointments in Her Majesty's Army, Navy, and Indian Medical Services.

II. Students preparing for the usual Primary and Pass Examinations of any of the Licensing Bodies.

III. Beginners entering upon their Medical Studies, either by a short term of apprenticeship, or under the new regulations of the Examining Board in England.

Both rapid advanced classes complete in three months or less, but still thoroughly practical, are provided; and also, as required, more elementary classes of six months' duration.

The instruction is given on the dissected and undissected body, with normal and pathological specimens, microscopical preparations, chemical, physiological, and surgical apparatus, splints, etc. The operations of surgery are performed on the dead body. Arrangements can be made for the attendance on midwifery cases, and for practical work in the dispensary.

The operations of surgery are all performed on the dead body by the students. The course is recognised by the London University.

The dissecting-room is open daily from 10 a.m. to 6 p.m. The demonstrators attend four hours daily. The Physiological and Chemical Laboratories are fitted with the requisites for practical work, and every effort is made to render the teaching thoroughly practical and demonstrative.

Fees.—Anatomy and physiology. For primary membership examination of royal college of surgeons, three months, £4 4s.; six months, £5 5s. For primary fellowship examination, six months, £5 5s. Surgery; For second membership examination of royal college of surgeons, three months, £5 5s.; six months, £8 8s.; for second fellowship examination, six months, £8 8s.

GENERAL HOSPITALS.

CHARING CROSS HOSPITAL.

Dental Surgeon—J. Fairbank, M.R.C.S., who attends at the Hospital, three days a week, at 9 a.m., for Dental Operations. A course of Lectures, on Dental Surgery is also given during January, February, and March.

The fee at this hospital for the L.D.S. Course is £42 2s., which may be paid in two instalments; this includes the matriculation fee of £2 2s., for which the student enjoys all the privileges of matriculated students, which are as follows.

1st. They pay a proportionately lower amount of fees.

2nd. They alone are eligible for the following offices and appointments:—Resident medical officers, resident surgical officers, resident accoucheur assistant demonstrators, pathological assistant, clinical clerks, dressers dentist's assistants, etc.

3rd. They are admitted to the use of the library and reading rooms.

4th. They are admitted, without additional fee, to the clinical and pathological demonstrations, and enjoy other advantages.

5th. They alone are entitled to compete for the scholarships.

Two prizes are awarded annually in the class of lectures on Dental Surgery, of the value of six guineas and four guineas respectively.

Students may serve as assistants to the Dental Surgeon for a period of three months.

The attention of Dental students is drawn to the re-arrangements which have been made in the hours of lectures, so as to enable students to attend the practice at the Dental Hospital of London. Charing Cross Hospital is within three minutes walk of the Dental Hospital of London.

For further information apply to the Dean, Dr. J. Mitchell Bruce, or to the Secretary, who attends daily at the office of the Medical School, Chandos Street, Charing Cross, between the hours of 10 and 4.

LONDON HOSPITAL MEDICAL COLLEGE.

Dental Surgeon—ASHLEY BARRETT, M.B., Lond., M.R.C.S., L.D.S.

The Council of the College of Surgeons recognise the Dental Department of the London Hospital as a school at which may be obtained the Dental Practice necessary to qualify a student for the Examination of the Dental Diploma. Dental Students may obtain the General Medical Education (that is, apart from certain Special Lectures to be attended at a Dental School) and the Dental Practice, necessary for the Diploma, at the London Hospital School on Payment of 40 Guineas.

A course of Lectures on the Anatomy and Pathology of the teeth, and Dental Surgery, will be delivered by Mr. ASHLEY BARRETT on days which will be duly announced. It comprises the treatment of Dental Irregularities, and of Toothache, and such matters in connection with the subject as are of interest to the Medical Practitioner. Mr. BARRETT gives practical instruction on Tuesdays at 9 a.m., which is open to all Students of the School and Hospital, and can be attended by gentleman who are not pupils, on payment of a fee of 10 Guineas.

A *Dental Assistant* is elected every three months, without any additional expense. The terms of office date from the first Tuesday in January, April, July, and October. In selecting Candidates priority will be given to those who have attended the greatest number of Lectures on Dental Pathology and Surgery, and have also been the most punctual in attendance in the Dental Department on Tuesday mornings.

Further information may be obtained on application to Mr. MUNRO SCOTT, the Warden, Medical College, London Hospital.

KING'S COLLEGE, STRAND, W.C.

No special arrangements are made for Dental Students.

MIDDLESEX HOSPITAL.

Consulting Dental Surgeons—J. TOMES, F.R.S., F.R.C.S., L.D.S., and J. S. TURNER, M.R.C.S., L.D.S.

Dental Surgeon—W. STORER BENNETT, F.R.C.S., L.R.C.P., L.D.S.

Assistant Dental Surgeon—CLAUDE ROGERS, D.M.D., M.R.C.S., L.D.S.

Students who intend to become Licentiates in Dental Surgery of the Royal College of Surgeons are admitted to attend the requisite courses of Lectures—which are arranged to fit in with the work at the Dental Hospitals—and Hospital Practice on payment of a fee of 40 guineas, in one payment, or by instalments of £30 on entrance, and £15 at the beginning of the second Winter Session.

A short course of Lectures on Dental Surgery will be delivered during November and December by the Lecturer on Dental Surgery, Mr. Storer Bennett. The Lectures will be supplemented by practical Demonstrations, which will be given every week during the Winter and Summer Sessions by the Dental Surgeon and Assistant Dental Surgeon. Students of the Hospital free, others pay a fee of 2 guineas.

Further information may be obtained from Andrew Clark, Esq., the Dean, or from the Resident Medical Officer at the hospital.

GUY'S HOSPITAL MEDICAL AND SURGICAL SCHOOL.

Dental Surgeon—H. MOON, M.R.C.S., L.D.S.

Assistant Dental Surgeon—F. N. PEDLEY, F.R.C.S., L.D.S.

Dressers are appointed to the Dental Surgeon, and hold office for two months, each receiving special certificates.

Practical instruction in Dental Surgery is given every Tuesday at 1.30 and Thursday at 12.30 o'clock. A certain number of cases of cleft palate, perforate palate, irregularities, lost portions of jaw, &c., are constantly under treatment for the instruction of students, the necessary apparatus being supplied at the expense of the hospital.

A course of Lectures on Dental Surgery is delivered during the Summer Session, and special instruction is given on this Subject in the Surgery, by Mr. Moon, throughout the year.

Application respecting the School may be made to the Dean, Dr. F. Taylor.

ST. GEORGE'S HOSPITAL.

Dental Surgeon—A. WINTERBOTTOM, F.R.C.S., L.D.S.

Mr. Winterbottom attends at the hospital on Tuesdays and Saturdays at 9 a.m.; his assistant daily at 9 a.m. and at 1 p.m.

A course of Lectures on Dental Surgery, is given by Mr. Winterbottom in the Summer Session. Free to students of the hospital.

Fee for general subjects in Dental Surgery, including Practical Chemistry, £55. Payable in two instalments: first year £30; second year £25.

Further information can be obtained by application to Dr. Wadham, Dean of the Medical School.

ST. BARTHOLOMEW'S HOSPITAL AND COLLEGE.

Dental Surgeons—MR. EWBANK, MR. PATTERSON.

Assistant Dental Surgeons—MR. ACKERY, MR. MACKRELL,

The Dental Department of the hospital is open on Tuesday and Friday mornings at 9 o'clock. The practice of the department is recognised by the Royal College of Surgeons.

The fee for general subjects for Dental students for the first winter is £33 2s. 6d., for the first summer £33 2s. 6d., or a single payment of £66 3s.

This hospital is the oldest and one of the largest in London, and among many advantages which it offers to the student is that provision is made for their residence in the College, on the recommendation of a medical officer of the hospital. For the terms of board and residence and all other information regarding the College, application should be made, either personally, or by letter, to the Warden of the College, Dr. Moore.

ST. MARY'S HOSPITAL MEDICAL SCHOOL.

Dental Surgeon—H. HOWARD HAYWARD, M.R.C.S., L.D.S.

Practical instruction in Dental operations is given on Wednesdays and Saturdays at 9.30 a.m. Dressers are appointed who hold office for three months. Also a special course of Lectures on Dental Surgery.

Fee for the course, £2 12s 6d.

For prospectus and further information apply to the Dean, who may be consulted in his room daily at 3.30 p.m.; or to the Medical Superintendent at the Hospital.

GEORGE P. FIELD, Dean of the School.

ST. THOMAS'S HOSPITAL.

Dental Surgeon—WILLIAM GILL RANGER, M.R.C.S.

Assistant Dental Surgeon—CHARLES EDWIN TRUMAN, M.R.C.S., L.D.S.

Gentlemen may receive instruction in diseases of the teeth, are appointed dressers, and can undertake operations, subject to the supervision of the Dental Surgeons, Tuesdays and Fridays at 10 a.m.

Numerous cases of irregularity of the teeth, stoppings, and the application of artificial appliances, are undertaken during the term.

The fee for attendance on the *general* subjects required of the students in Dental Surgery, is for the two years £55, or by instalments, £50 for the first year, and £10 for the second year.

Dental practice, one year, two guineas; perpetual, three guineas.

For further information apply to G. RENDLE, Esq., M.R.C.S., Medical Secretary.

WESTMINSTER HOSPITAL.

Dental Surgeons—J. WALKER, M.D., M.R.C.S., L.D.S., and A. MORTON SMALE, M.R.C.S., L.D.S.

Dr. Walker attends at 9.15 a.m., on Wednesdays, and Mr. Morton Smale, on Saturdays at 9.15 a.m., for practical demonstration of diseases and operations on the teeth.

The fee for attendance on the Dental Practice is £2 2s. for three months, and £3 3s. for six months. The whole of the General Lectures and Surgical Practice required for the Dental Diploma of the College of Surgeons can be attended for £50, in one sum, on entrance, or for two sums of £32 10s. and £20, payable at the beginning of each year.

Dr. Walker will deliver a course of Lectures on Dental Surgery and Pathology on Wednesdays, in October, November, and December, at 9.30 a.m.

Classes in Metallurgy in its application to Dental purposes, Dental Anatomy and Physiology, and in Dental Mechanics, will be formed should a sufficient number of students give in their names.

The Calendar will be forwarded on application to Dr. de Havilland Hall, Dean of the School, who will afford every information.

SCHOOL OF MEDICINE, SURGEON'S HALL, EDINBURGH.

The fees required for students attending general subjects necessary for the curriculum of the Royal College of Surgeons, Edinburgh, are £38 10s.

HARVARD UNIVERSITY, DENTAL DEPARTMENT, BOSTON, MASS., U.S.A.

The Sessions of this School begin the last Thursday in September, and end the last in June, making nine months of practically continuous work in each year.

General Anatomy with Dissections, Physiology, and General Chemistry, are the Studies of the first year. Of the second year they are Operative and Mechanical Dentistry, Dental Materia Medica, and Therapeutics, Oral Surgery, and Surgical Pathology. The Student can also attend gratuitously all the *lectures* in any other department of the University.

The infirmary of the Massachusetts Hospital furnishes abundant facilities, averaging 8,000 operations, of which a large proportion consists of filling teeth every year.

The University degree, D.M.D. (Dentariæ Medicinæ Doctor) is conferred on all who fulfil the requirements.

The diploma is recognised by the English Medical Council.

For the first year a Student is a member of the school the fee is 200 dols., for the second year 150 dols., and for any subsequent year 50 dols.

[f] For further information and catalogues, address, Thomas H. Chandler, Dean, Hotel Bristol, corner of Boylston and Clarendon Streets, Boston Mass., U.S.A.

THE DENTAL COLLEGE OF THE UNIVERSITY OF MICHIGAN.

The Ninth Annual Session of this Institution will commence on the 1st of October, and close on the last Wednesday of March, thus making a course of nine months. A preliminary examination, having reference to general educational attainments is required.

The Student in this department will receive instructions in Anatomy, Physiology, Pathology, Chemistry, Materia Medica, Therapeutics and Surgery, from the Professors of their respective branches in the *Department of Medicine and Surgery* of the University, when lectures commence, and continue the same as with the Dental College.

FACULTY OF THE DENTAL DEPARTMENT.

J. B. ANGELL, LL.D.	- - - - -	President
J. TART, M.D., D.D.S.	- - - - -	Principles and Practice of Operative Dentistry
CORYDON L. FORD, M.D., D.D.S.	- - - - -	Anatomy and Physiology
J. A. WATLING, D.D.S.	- - - - -	Clinical and Mechanical Dentistry
W. H. DORRANCE, D.D.S.	- - - - -	Prosthetic Dentistry
U. D. BILLMEYER, D.D.S.,	- - - - -	Demonstrator of Clinical Dentistry
G. S. CASE, D.D.	- - - - -	Demonstrator of Prosthetic Dentistry.

Special instruction will be given in Dental Pathology, Oral Surgery, Dental Therapeutics, and Diseases of Women and Children, with reference to the teeth.

Students should be promptly present at the College on Friday, September 28th, at 10 o'clock a.m., to make the preliminary arrangements for entering upon regular work.

CONDITIONS OF GRADUATION.

The candidate must be twenty-one years of age. He must furnish evidence of good moral character.

He must devote three years to the study of his profession. He must attend two full courses of lectures in the Dental College, or one course in some college having an equal standard of requirements, and the last one here, and we recommend that he attend three courses regularly.

He must sustain an examination satisfactory to the Faculty in all the branches taught.

FEES AND EXPENSES.

The fees which must be paid in advance, are as follows:

RESIDENTS OF MICHIGAN.—Matriculation Fee, Dols. 1,000; annual dues, Dols. 25.00.

NON-RESIDENTS.—Matriculation, Dols. 25.00; annual dues, Dols. 35.00.

GRADUATION FEE.—For all alike, Dols. 10.00. The admission fee is paid but once, and entitles the student to the privilege of permanent membership in any department of the University. The annual due is paid the first year and every year thereafter while at the University.

For further particulars, address the Dean of the Dental College, Ann Arbor, Mich.—J. Taft, Dean.

IV. SCIENTIFIC ASSOCIATIONS.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

President—C. SPENCE BATES, F.R.S.

Vice-Presidents.

RESIDENT.

T. CHARTERS WHITE.

G. GREGSON.

HENRY SEWILL.

NON-RESIDENT.

J. T. BROWNE-MASON (Exeter).

R. WHITE (Norwich).

ANDREW WILSON (Edinburgh).

Treasurer—JAMES PARKINSON.

Librarian—FELIX WEISS.

Curator—S. J. HUTCHINSON.

Editor of Transactions—T. OAKLEY COLES.

Honorary Secretaries.

DAVID HEPBURN (Council)

W. C. STORER-BENNETT (Foreign).

R. H. WOODHOUSE (Society)

Councillors.

Resident.—F. CANTON; A. CARTWRIGHT; C. S. TOMES; W. St. GEORGE ELLIOTT; A. WINTERBOTTOM; SAMUEL CARTWRIGHT; A. MORTON SMALLE; T. HOWARD MUMMERY and A. S. UNDERWOOD.

Non-Resident.—T. F. COLE (Ipswich); G. C. MCADAM (Hereford); W. E. HARDING (Shrewsbury); ROBERT REID (Edinburgh); T. R. BROWNLIE (Glasgow) and T. H. WHATFORD (Eastbourne).

EXTRACTS FROM THE BYE-LAWS.

Objects and Constitution of the Society.

This Society is instituted for the encouragement and diffusion of knowledge in Dental Surgery, and for the promotion of intercourse among members of the Dental Profession.

The Society shall consist of resident, non-resident, corresponding, and honorary members.*

1. The resident members shall consist of gentlemen practising as Dental Surgeons in London, or within ten miles of General Post Office, St. Martin's-le-Grand.
2. The non-resident members shall consist of gentlemen practising as Dental Surgeons residing beyond ten miles from London.
3. The Corresponding members shall consist of distinguished gentlemen practising as Dental Surgeons, residing in the Colonies of Great Britain or foreign countries.
4. The honorary members shall consist of distinguished practitioners of Dental Surgery who have retired from practice, of distinguished medical practitioners, and of gentlemen distinguished in any department of science.

* The following bye-law came into force last year:—

"That on and after November 1st, 1882, candidates for the Resident, Non-Resident, or Corresponding Membership of the Society, shall not be eligible unless they practise as Dental Surgeons, or are interested in the progress of Dental Surgery, and are also Licentiates in Dental Surgery, or qualified Practitioners of Medicine or Surgery; or possess such a Diploma or Degree, as in the opinion of the Council, will qualify them for the Membership of the Society."

Persons who advertise in the public journals or by circular, either their profession or their professional attainments or public appointments, or anything relating to their mode of practice or charges, or who expose for public inspection specimens of operative or mechanical Dentistry, or conduct their practice in any way which in the opinion of the Council of this Society is derogatory to the respectability of the profession, shall not be considered eligible for nomination as members.

No person being the proprietor of a secret remedy, or holding a patent relating to the requirements of Dental practice, shall be a member of this Society.

Election and Admission of Resident and Non-Resident Members.

Recommendations for resident members shall be signed by two members from personal knowledge, and by two or more from general knowledge. Recommendations for non-resident members may be signed by one member only from personal knowledge, and by two or more from general knowledge.

All recommendations for resident or non-resident members shall be submitted to and approved of by the Council before being proposed to the Society for ballot.

Contributions of Members.

Every person elected a resident member shall pay three guineas as an admission fee, and an annual subscription of two guineas, *in advance*.

Every person elected a non-resident member shall pay two guineas as an admission fee, and an annual subscription of one guinea, *in advance*.

The entrance fees and first annual subscription shall be paid on admission, and the subsequent annual subscriptions in the month of November in each year; but new members, proposed at or after the annual meeting, shall not be required to pay any subscription for the current session.

Ordinary Meetings.

The ordinary meetings of the Society shall be held on the first Monday in each month, from November to June, both inclusive, at 8 p.m., precisely, except in the month of January.

Each member may introduce two visitors at these meetings, on writing the visitors' names in a book to be kept for that purpose. The same visitors shall not be admitted more than three times during one session.

Annual General Meeting.

The annual general meeting of the Society for the election of the officers and councillors, &c., shall be held on the evening of the second Monday in January every year.

Society's Transactions.

The Transactions of the Society, under the designation of 'Transactions of the Odontological Society of Great Britain,' shall be printed at such times and in such manner as the Council shall direct.

The 'Transactions' shall be presented to all resident and non-resident members of the Society, who have paid their annual subscriptions.

ODONTO-CHIRURGICAL SOCIETY OF SCOTLAND.

30, CHAMBERS STREET, EDINBURGH.

President—W. BOWMAN MACLEOD, L.D.S., Ed., F.R.S.E.

Vice-Presidents.

W. HERBERT WILLIAMSON, L.D.S., Ed., M.D.D.D.S. JOHN AUSTIN BIGGS.

Treasurer—MALCOLM MACGREGOR, L.D.S., Edin.

Secretary—JOHN S. AMOORE, L.D.S., Eng.

Curator and Librarian—G. W. WATSON, L.D.S., Edin.

Council.

ANDREW WILSON, L.D.S., Ed. E. A. CORMACK, L.D.S., Ed., L.R.C.P. & S.Ed.
JAMES MACKINTOSH.

JOHN MOORE LIPSCOMBE, L.D.S., Eng., Kilmarnock.

Ordinary Meetings.—The Society meets on the second Thursdays of November, December, January and February, and the 13th March.

*EXTRACTS FROM THE CONSTITUTION AND LAWS.**Name and Objects.*

The Society shall be named the "Odonto-Chirurgical Society," and shall have for its objects the Promotion and Diffusion of Knowledge in matters connected with Dental Surgery; the furtherance of communications on such subjects by Members of the Society; and otherwise to advance the interests of Dental Surgery as a branch of medicine.

Ordinary and Honorary Members.

The Society shall consist of Ordinary, Honorary, and Corresponding Members:

The Ordinary Members shall consist of Gentlemen practising as Dentists in Great Britain, and of Medical and Surgical Practitioners interested in Dental Surgery.

The Honorary and Corresponding Members shall consist of Gentlemen practising Dentistry in Great Britain, in the Colonies, or in Foreign Countries, and of retired Dental Practitioners in Britain, as well as such Medical or generally Scientific men as may have distinguished themselves in connection with Dental Surgery.

The Ordinary Members shall have vested in them the Government of the Society, and all cases not otherwise specified shall be decided by them by a majority of votes, by ballot, if required.

Obligations of Members.

No Member shall be permitted to advertise his profession, his modes of practice, or his charges, either in the public journals or by circular. They shall not be permitted to expose specimens of their work for public inspection, nor to carry on their practice in connection with any other business, nor to hold any patent relating to Dental practice, nor to conduct themselves in any way which the Society may consider derogatory to the Profession, so long as they continue Members of the Society. But Members who practice in towns other than that in which they reside shall be allowed to intimate their visits; such intimations being subject to the approval of the Council.

Applications for Membership.

Candidates for admission as Members of the Society shall be recommended by an Ordinary Member, and the recommendation seconded by another. After being approved by the Council, such recommendation shall be read to the Society at an Ordinary Meeting, and shall lie over to the next, when the Candidate shall be balloted for, when two-thirds of the Members present must be in his favour to secure his election.

Contributions.

Ordinary Members residing within a ten-mile radius of the City shall pay an Entrance Fee of One Guinea, and One Guinea of an Annual Subscription, in advance. All other Ordinary Members shall pay an Entrance Fee of One Guinea, and Ten Shillings and Sixpence of an Annual Subscription. All Annual Subscriptions to date from the 1st of March preceding the Candidate's admission.

MIDLAND ODONTOLOGICAL SOCIETY.

OFFICERS AND COUNCIL—1885.

Vice-President.

ADAMS PARKER, L.D.S., Eng. | WILLIAM BARKLEY, L.D.S., Eng.

Sub-Editors.

ADAMS PARKER, L.D.S., Eng. | WILLIAM J. WATSON, L.D.S., Edin.

Hon. Secretary. WILLIAM J. WATSON, L.D.S., Edin.*Auditors.* LEWIS & ATTILER, Chartered Accountants.*Council.*

H. R. FRYER BROOKES, L.D.S.I.

S. F. CLARK, L.D.S.I.

T. M. COTTAM, L.D.S.I.

F. DALLY, L.D.S.I.

HORATIO JONES, L.D.S.I.

HARRY OWEN, L.D.S.I.

RICHARD OWEN.

EDWIN ROBERTS, L.D.S., Glas.

J. E. SUTTON, L.D.S.I.

JAMES WILLIAMS, L.D.S., Eng.

EXTRACTS FROM THE BYE-LAWS.

Days and Place of Meeting.

The members can meet on the first Thursday in January, February, March, April, May, October, November, and December, in the Rooms of the Society, at the Medical Institute, Edmund Street, Birmingham.

Name and Objects.

This Society is called "THE MIDLAND ODONTOLOGICAL SOCIETY," and is strictly non-political in its character, being instituted for the elevation of the Profession by the promotion and diffusion of scientific and practical knowledge in matters pertaining to Dental Surgery, the encouragement of social intercourse among the members of the Profession and collateral Sciences, and the furtherance of the interests of Dentistry as a branch of General Surgery and Medicine.

Constitution.

The Society shall consist of members, honorary members, and associates.

- (a.) The members shall consist of gentlemen legally entitled to practice Dental Surgery.
- (b.) Corresponding members shall consist of distinguished gentlemen, practising as Dental Surgeons, residing in the colonies of Great Britain or in Foreign Countries.
- (c.) Honorary members shall consist of distinguished Dental Surgeons who have retired from active practice, and of Medical Practitioners whose names appear in the Medical Register; and of gentlemen distinguished in any department of science.
- (d.) Associates shall consist of Dental students, articled pupils, and assistants.

Any gentlemen desirous of becoming a member of this Society must sign and deposit with the Secretary a declaration.

Subscriptions.

The subscription shall be for members, half a guinea per annum; for associates, five shillings per annum. The subscriptions to date from the day of election and from the first of January in each subsequent year, and shall be paid in advance.

Publication of Transactions.

A copy of all papers read before the Society must be deposited with the Hon. Secretary, in such form as the Council may from time to time direct. Such copy shall become the property of the Society, to be dealt with at the discretion of the Council, who shall form a Standing Committee to determine upon the publication and form of publication of the Society's Transactions.

Donations to the Society.

Any person who shall present books, money, specimens, or other property to the Society, shall be considered a benefactor thereof, and shall have his name and a description of the gift recorded in a book kept for the purpose. The yearly entries of such book shall be read at the Annual General Meeting.

Life Members.

A donation of ten guineas in one sum shall constitute a life member of the Society, subject to Bye-Law III., and the consent of the Council, the Donor being entitled to all the privileges of other members.

Visitors.

Each member or associate may introduce two visitors at these meetings, but the same visitor shall not be admitted more than *twice* in one year. All visitors must sign the Visitors' Book kept by the Secretary.

Annual General Meeting.

The Annual General Meeting of the Society, for the election of Officers and Council, the alteration and amendment of the Bye-Laws and other business, shall be held in Birmingham on the first Thursday in February

The Property of the Society.

The whole of the Society's property and effects, of whatever kind soever, shall be vested in and placed under the direction and management of the Council, subject to the consent of General Meetings of the Society.

THE BRITISH DENTAL ASSOCIATION.

(INCORPORATED JUNE 3RD, 1880.)

40, LEICESTER SQUARE, LONDON, W.C.

President—RICHARD WHITE, L.D.S., Eng.

President-Elect—SIR EDWIN SAUNDERS, F.R.C.S.

Treasurer—JAMES PARKINSON, L.D.S., Eng.

REPRESENTATIVE BOARD.

President—JOHN TOMES, F.R.S., F.R.C.C., L.D.S., Eng.

Vice-President—J. SMITH TURNER, M.R.C.S., L.D.S., Eng.

For London.

C. VASEY, L.F.P.S., L.D.S., Eng.

A. GIBBINGS, M.R.C.S., L.D.S., Eng.

A. HILL, L.D.S., Eng.

F. WELLS, L.D.S., Eng.

T. GADDES, L.D.S., Eng.

S. J. HUTCHINSON, M.R.C.S., L.D.S., Eng.

T. A. ROGERS, M.R.C.S., L.D.S., Eng.

H. E. SEWILL, M.R.C.S., L.D.S., Eng.

C. S. TOMES, F.R.S., M.A., Oxen.
M.R.C.S., L.D.S., Eng.

STORER BENNETT, F.R.C.S.,
F.R.C.P., Lond., L.D.S., Eng.,

CLAUDE ROGERS, D.M.D.,
M.R.C.S., L.D.S., Eng.

MORTON SMALE, M.R.C.S., L.D.S.,
Eng.

T. UNDERWOOD, L.D.S., Eng.

T. CHARTERS WHITE, M.R.C.S.,
L.D.S., Eng.

A. J. WOODHOUSE, L.D.S., Eng.

For the Provinces.

J. O'DUFFY, L.D.S.I., Dublin.

T. BROWN MASON, L.D.S., Eng.,
Exeter.

H. CAMPION, M.R.C.S., Manchester.

J. DENNANT, L.D.S., Eng., Brighton.

T. COOKE PARSON, M.R.C.S., L.D.S.,
Clifton.

FENN COLE, L.D.S., Eng., Ipswich.

G. CUNNINGHAM, D.M.D., Cam-
bridge.

T. MAHONIE, L.D.S.I., Sheffield.

R. ROGERS, L.D.S.I., Cheltenham.

S. WORMALD, L.D.S.I., Stockport.

J. R. BROWNLIE, L.D.S., Eng.
Glasgow.

G. BRUNTON, Esq., Leeds.

R. F. H. KING, L.D.S., Eng.,
Newark.

R. T. STACK, D.M.D., F.R.C.S.I.,
M.D., Dublin.

W. H. WILLIAMSON, M.D., L.D.S.,
Edin., Aberdeen.

Ex-Officio Members.

H. BLANDY, L.D.S.I., L.D.S., Edin., <i>President</i>	} Midland Counties Branch
W. H. WAITE, D.D.S., L.D.S.I. <i>Hon. Sec.</i>	
GEO. C. MCADAM, D.D.S., Eng., <i>President</i>	} Western Counties Branch.
H. B. MASON, L.D.S., Eng., <i>Hon. Sec.</i>	
R. W. WHITE, M.R.C.S., L.D.S., Eng., <i>President.</i>	} Eastern Counties Branch.
W. A. RHODES, L.D.S.I., <i>Hon. Sec.</i>	
WALTER CAMPBELL, L.D.S., Eng., <i>President.</i>	} Scottish Branch.
W. B. MACLEOD, L.D.S., Edin., <i>Hon. Sec.</i>	
W. S. WOODBURN, L.D.S., Glas., <i>President.</i>	} West of Scotland Branch.
W. F. MARTIN, L.D.S., Glas., <i>Hon. Sec.</i>	
CHARLES SIMS, L.D.S., Eng., <i>President</i>	} Central Counties Branch.
F. E. HUXLEY, M.R.C.S., L.D.S., Eng., <i>Hon. Sec.</i>	
FREDERICK CANTON, M.R.C.S., L.R.C.P., Lond., L.S.A., L.D.S., Eng. <i>Hon. Secretary.</i>	

Extracts from Memorandum of Association and Bye-Laws.

The objects for which the Association is established are the promotion of Dental and the allied sciences, and the maintainance of the honour and the interests of the Dental profession by

"The Periodical meetings of the Members of the Association and of the Dental profession generally, in different parts of the country.

"The publication of a periodical journal, and by

"The maintainance of the spirit and provisions of the Dentists' Act, by such lawful means as may be necessary, etc., etc."

Extract from Bye-Laws.

4. A person who is registered in the Dentists' Register shall be eligible for election as a member of the Association, provided he be of good character; that he does not conduct his practice by means of the exhibition of Dental specimens, appliances, or apparatus in an open shop, or in a window, or in a show-case exposed to public inspection; or by means of public advertisements or circulars, describing modes of practice, or patented or secret processes; or by the publication of his scale of professional charges.

5. Any registered Dental practitioner who can subscribe to a declaration (provided by the Association) embodying the preceding Bye-law, and who shall be recommended as eligible by any three members of the Association, may be elected a member by the Representative Board or by a committee appointed for that purpose by that Board, or by the Council of a recognised Branch.

The subscription is One Guinea per annum, and each Member is entitled to a copy of the Journal of the Association monthly, and to attend the Annual Meetings of the Association.

Forms of application for Membership may be had of the Hon. Sec., 40, Leicester Square, London, W.C.

BENEVOLENT FUND OF THE BRITISH DENTAL ASSOCIATION.

Chairman—JOHN TOMES, Esq., F.R.S. (Pres. of the Representative Branch).

Trustees.

SIR EDWIN SAUNDERS, London.

JAMES PARKINSON, Esq., London.

RICHARD ROGERS, Esq. Cheltenham.

Treasurer—A. J. WOODHOUSE, Esq.

Committee of Management.

J. DENNETT Esq. Brighton (Vice-Chairman).

S. J. HUTCHINSON, Esq., London.

S. LEE RYMER, Esq. Croydon.

W. H. WAITE, Esq., Liverpool.

OAKLEY COLES, Esq. Lon. (*Hon. Sec.*).

BRITISH DENTAL ASSOCIATION. WESTERN BRANCH.

OFFICERS 1885-6.

President—GEO. C. MCADAM, L.D.S., Eng.

President-elect—J. D. BROWNE-MASON, L.D.S., Eng.

Vice-Presidents.

C. SPENCE BATE, F.R.S., L.D.S.,
Eng.

GEORGE PARKINSON, L.D.S., Eng.

T. COOKE PARSON, M.R.C.S., Eng.

Hon. Treasurer—J. T. BROWNE-MASON, L.D.S., Eng.

Council.

E. APPERLEY, L.D.S., Eng.

F. H. BALKWILL, L.D.S., Eng.

J. ROGERS BATE, L.D.S.I.

H. P. FRONALD, L.D.S.I.

T. H. GARTRELL.

C. A. HAYMAN, L.D.S., Eng.

W. HELYAR, L.D.S.I.

GEO. T. HOLME, L.D.S.I.

F. YOUNGMAN, L.D.S., Eng.

RICHARD ROGERS, L.D.S.I.

CHAS. GAINES, M.R.C.S., Eng.

W. A. HUNT, L.R.C.P., M.R.C.S.,
Eng.

Hon. Treasurer—J. T. BROWNE-MASON, L.D.S., Eng.

Council.

A. G. LEVASON, L.D.S.I.

H. MALLET.

W. V. MOORE, L.D.S., Eng.

R. P. MORRISON, L.D.S.I.

G. B. PEARMAN, L.D.S., Eng.

A. SMITH, L.D.S.I.

A. B. VERRIER, L.D.S.I.

E. N. WASHBOURN, L.D.S., Eng.

Hon. Sec.—HENRY B. MASON, L.D.S., Eng.

A person who is registered in the Dentists' Register shall be eligible for election as a member of this Branch, provided he be of good character; that he does not conduct his practice by means of the exhibition of Dental specimens, appliances, or apparatus in an open shop, or in a window, or in a show-case exposed to public inspection, or by means of public advertisements; or circulars describing modes of practice, or patented or secret processes; or by the publication of his scale of professional charges.

Any Dental practitioner, who can subscribe to the conditions laid down in Bye-law 4, who has been recommended as eligible by any three members of this Branch, may be elected a Member by the Council, and shall be admitted a Member of the British Dental Association.

THE SCOTTISH BRANCH OF THE BRITISH DENTAL ASSOCIATION.

President—WALTER CAMPBELL, L.D.S., Eng., Dundee.

Vice-President—ANDREW WILSON, L.D.S. Edin., Edinburgh.

Treasurer—J. AUSTIN BIGGS, Glasgow.

Hon. Sec.—W. BOWMAN MACLEOD, L.D.S. Ed., Edinburgh.

Council.

R. REID, L.D.S., Eng., Edinburgh

M. FINLAYSON, L.D.S., Ed., Edin.

JOHN SMITH, M.D., F.R.C.S. Edin.

LEON JABLONSKI PLATT, L.D.S.,
Edin., Stirling.

A. SMYTH, Glasgow.

J. AUSTIN BIGGS, Glasgow.

J. WOOD, L.D.S., Ed., Dumfries.

P. Crombie, L.D.S., Ed., Aberdeen.

Bye-Laws—The Bye-Laws are identified with those of the parent
Association.

THE MIDLAND BRANCH OF THE BRITISH DENTAL ASSOCIATION.

President—H. BLANDY, L.D.S., Nottingham.

President Elect—A. M. MATTHEWS, L.D.S., Bradford.

Treasurer—S. WORMALD, L.D.S.I., Stockport.

Hon. Sec.—W. H. WAITE, L.D.S.I., Liverpool.

Council.

H. CAMPION, M.R.C.S., Manchester.
 E. H. WILLIAMS, L.D.S., Manchester.
 ROFF KING, L.D.S.I., Shrewsbury.
 T. MURPHY, L.D.S.I., Bolton.
 J. RENSHAW, L.D.S.I., Rochdale.

G. BRUNTON, Leeds.
 T. MAHONIE, L.D.S.I., Sheffield.
 L. MATHESON, L.D.S., Manchester.
 R. E. STEWART, L.D.S., Liverpool.
 W. A. WORMALD, L.D.S.I., Bury.

J. S. CRAPPER, L.D.S.I., Hanley.

Composed of Members of the British Dental Association who reside in the Midland and North Western Counties of England and of Associates who can fulfil the conditions laid down in the Bye-laws. The Annual Meeting takes place in April.

EXTRACT FROM BYE-LAWS.

2. The Association shall consist of Members and Associates. No one shall be eligible for membership who is not already a member of the British Dental Association. Any registered Practitioner of good character, who does not conduct his practice by means of the exhibition of Dental specimens, appliances, or apparatus in an open shop, or in a window, or in a showcase exposed to public inspection; or by means of public advertisements or circulars describing modes of practice, or patented or secret processes; or by the publication of his professional qualification, or scale of professional charges, may be admitted as an Associate. Associates shall be entitled to all the privileges of the Branch Association, and shall be entitled to vote, or hold office therein.

3. Any Member of the British Dental Association may be elected a Member of the Branch by the Council of the Branch, at any of their Ordinary Meetings, on his sending a written application for election to the Secretary of the Branch.

4. Any registered Practitioner who can subscribe to the conditions laid down in Bye-laws 2, and who shall be recommended as eligible by any three Members or Associates, may be elected an Associate by the Council, on his forwarding the recommendation and his subscription to the Honorary Secretary of the Branch.

BRITISH DENTAL ASSOCIATION.

OFFICERS OF THE EASTERN COUNTIES' BRANCH.

President—R. W. WHITE, M.R.C.S., L.D.S., Eng., Norwich.

Treasurer—J. B. BRIDGEMAN, L.D.S.I., Norwich.

Hon. Sec.—W. A. RHODES, L.D.S.I., Cambridge.

Council.

J. FENN COLE, L.D.S., Eng., Ipswich.
 G. CUNNINGHAM, B.A., D.M.D.,
 Cambridge.
 FRANK HALL, L.D.S.I., Hertford.
 B. W. HARCOURT, Norwich.

ALFRED JONES, SENR., Cambridge.
 A. L. LITTLEBOY, Norwich.
 N. TRACY, L.D.S., Eng., Ipswich.
 R. WHITE, L.D.S., Eng., Norwich.

Districts.

Norfolk, Suffolk, Cambridgeshire, Essex, Lincolnshire, Northamptonshire, Huntingdonshire, Bedfordshire, and Hertfordshire.

Bye-Laws.

1. Any person registered in the Dentists' Register shall be eligible for election as a member of this Association provided he be of good character, that he does not conduct his practice by means of the exhibition of Dental specimens, appliances, or apparatus in an open shop or in a window, or in a show-case exposed to public inspection; or by means of public advertisements or circulars describing modes of practice, or patented or secret processes; or by the publication of his scale of professional charges; or by the assumption of any title, degree, or diploma not recognised by this Association.

2. Any registered Practitioner, not disqualified by any bye-law, who shall be recommended as eligible by any three members of the Association (one being from personal knowledge) may be elected a member by the Council, the election to be by ballot, three black balls to exclude.

THE STUDENTS' SOCIETY OF THE DENTAL HOSPITAL OF LONDON, LEICESTER SQUARE.

President—C. TRUMAN, M.A., M.R.C.S., L.D.S.

Vice-Presidents.

E. LATCHMORE, L.D.S.

S. C. BUCKLAND, L.D.S.

Treasurer—H. S. PARKINSON, L.D.S.

Hon. Secs.

W. J. ENGLAND, L.D.S.,

G. G. CAMPION, L.D.S.

Curator and Librarian—C. F. RILOT.

Councillors.

A. BARDET, L.D.S.

A. HELYAR.

C. R. SMITH, L.D.S.

L. E. SEXTON.

A. L. GOADBY.

J. F. COLYER.

G. O. WHITTAKER.

J. D. WOODHOUSE.

T. H. G. WRIGHTON.

The object of the Society is the consideration of matters generally and specially appertaining to Dentistry. The affairs of the Society are managed by a Council consisting of a President, two Vice-Presidents, Treasurer, two Secretaries, Curator, and nine other members. The President is chosen from the past Students who have obtained their degree of L.D.S.; the Vice-Presidents from past Students, with or without qualification.

Any gentleman wishing to become a member must be proposed and seconded at one meeting, and be balloted for at the next; one black ball in four to exclude. The entrance-fee for Ordinary members is half-a-crown, and there is an annual subscription of the same amount.

Ordinary meetings are held at 7 p.m. on the second Monday in every month, from October to March inclusive. The annual meeting for the election of officers, and other business, is held in January of each year.

Every member has the power of introducing one visitor, not being a Student of the Hospital or school, to the evening meetings, with the consent of the President. Visitors are allowed to take part in the discussion of the papers and clinical cases.

There is a Library in connection with the Society, the Curator discharging the duty of Librarian.

The Council offer a prize, value £3 3s. at the end of each year for the best paper read before the Society during that year.

STUDENTS' SOCIETY OF THE NATIONAL DENTAL HOSPITAL AND COLLEGE.

President—CHAS. W. GLASSINGTON, Esq., M.R.C.S., L.D.S., Edin.

Vice-Presidents—

THOMAS GADDES, L.D.S., Eng. and Edin.

W. R. HUMBY, L.D.S., Eng., and H. G. READ Esq., L.D.S., Eng.

Treasurer and Secretary of the Council—FRED BATE.

Secretary—FRED C. WRIGHT (Society).

Council—F. BROMLEY; I. PRAGER, L.D.S.I.; S. P. PENROSE, L.D.S., Edin.; H. KLUGHT, L.D.S., Glas.; R. LOVITT and B. DOUTHWAITE, L.D.S., Edin.

This Society, which was established March 15th, 1878, was constituted for the encouragement and diffusion of knowledge in Dental Science, and for the promotion of intercourse among its members, and all Students of Dental Science are eligible for Membership. All Candidates for Membership must be approved by the Council before being proposed to the Society for election. The Entrance Fee is 2s. 6d., and the Annual Subscription 2s. 6d., to be paid in advance. The ordinary meetings of the Society are held on the first Friday in each month, from October to March, both exclusive, at 8 p.m. precisely. Each Member may introduce two visitors, not being Students of the Hospital or College, but the same visitors may not be admitted more than three times during one Session.

British Journal of Dental Science.

No. 425. LONDON, OCT. 1, 1885. VOL. XXVIII.

EPITHELIOMA OF THE GUMS,
INVOLVING THE ALVEOLAR PROCESSES OF THE LOWER JAW—
NECESSITATING PARTIAL EXCISION OF THE JAW IN TWO CASES,
AND REMOVAL OF THE WHOLE OF THE MAXILLA IN THE THIRD
CASE.

By FREDERIC BOWREMAN JESSETT, F.R.C.S.
Surgeon to the Cancer Hospital, Brompton.

Case I.—I. L., ætat 63, a Chelsea pensioner, was admitted into the Cancer Hospital on August 20th, 1883, suffering from Epithelioma of the anterior part of the lower jaw, the disease corresponding in extent with the incisor and canine and first left bicuspid teeth, extending along the floor of the mouth, as far back as and implicating the frenum of the tongue, the sublingual gland being also affected.

His history was as follows:—About three months before admission, he noticed a small swelling near the left lower canine tooth, for which he had the tooth extracted. The swelling however, increased, and he suffered great pain. The submaxillary gland on the right side shortly became enlarged, and the growth increased rapidly along the gum and floor of mouth. He was a great smoker. There was no history of any hereditary tendency or syphilis.

Present State.—Gums spongy and unhealthy, several stumps of teeth as well as the teeth themselves are loose, the alveolar process being evidently eaten away by the growth which extends under the tongue, it is chiefly situated on the left side of the jaw, from the bicuspid tooth on the left side, to the canine in the right side, implicating the frenum of the tongue and mucous membrane of the floor of the mouth. The

sublingual gland is enlarged and indurated. The submaxillary gland on the right side is enlarged and painful.

On August 28th, the man was placed under the influence of æther, and I endeavoured to remove the growth with the gouge and chisel, but it was so deeply implicated in the jaw that I found it necessary to remove a portion of that bone. This I did by dividing the lower lip in the middle line to the chin, and dissecting the soft parts from the bone, and then sawing through the jaw on the left side at the second bicuspid tooth, and on the right side at the canine tooth I detached the piece of bone, and proceeded to clear the floor of the mouth of the diseased structure.

There was some free hæmorrhage, which was however, easily controlled. I brought the lip together with hare-lip pins, but did not attempt to bring the two ends of the maxilla together.

This man did well. I had his mouth kept constantly sponged out with a weak solution of carbolic acid lotion—1 in 60,—and he was fed with beef tea.

The interval between the ends of the bones, speedily filled up with good healthy tissue, which was however, somewhat retarded by the ends of the bones necrosing.

The sequestrum was, however, thrown off in a few weeks, since which time the man has made a good recovery. The submaxillary glands which were enlarged, and which it was deemed inadvisable to touch at the time of the operation gradually got smaller, and I do not anticipate any further trouble from this quarter. The man is now convalescent, and has much improved in general health.

The diseased mass was found in microscopical examination to be epithelial in character, and the parts nearer to, and which implicated the bone had a large number of spindle cells, mixed with the fibrous tissue.

Case II.—E. I., ætat 69, Epithelioma of the left half of lower maxilla implicating the left tonsil, the left half of soft palate and the left side of root of tongue, also a small patch on the posterior wall of the pharynx. The man first noticed five or six months previous to admission, a soreness on the inside of his cheek, also some slight tenderness on swallowing hard

food. The disease gradually increased for two months, when he found himself unable to swallow any hard food at all.

Has been a great smoker. Has never had an injury to the jaw. Pain at present very slight, and no great difficulty in taking soft food or slops.

No family history of cancer. No history of Syphilis.

Submaxillary glands on left side enlarged and tender.

Examination with laryngoscope. General redness of pharynx, papilla on back of tongue enlarged, left tonsil, cheek and part of soft and hard palate generally matted together.

Seeing that the disease was pretty well limited to the parts mentioned, that the man was rapidly losing strength and flesh, and the difficulty he had to swallow, it was deemed quite justifiable to excise the half of the jaw and other diseased parts.

On September 18th, he was put under the influence of æther, and an incision made through the lower lip in the middle line to midway between the chin and hyoid bone, another incision being carried from this point along the lower edge of the jaw, extending as high as the articulation with the temporal bone. A strong whip-cord ligature was then passed through the tongue and given to an assistant to hold. The flap formed by the primary incision was dissected from the bone and turned up, the jaw being divided in the middle line was detached from the soft parts and speedily disarticulated.

The facial and other arteries were secured by Well's forceps as divided. I then with a gouge forceps removed a portion of the hard palate, and alveolar process of upper maxilla, and cut away with scissors the tonsil and soft diseased part of the palate. The bleeding which was rather free here, was arrested by the application of Paquelin's cautery, and the small patch of disease on the posterior wall of the pharynx was also destroyed by the cautery. I next enucleated the submaxillary gland, and the one or two small ones which came in view. The flap was brought down, and the edges secured with carbolised silk sutures, the lip being secured with silver wire, and a drainage tube inserted in the lower angles.

The patient had a good night, and for the next two or three days everything seemed to be going on well, the mouth was kept washed out with carbolised water, and the patient ordered beef tea. It was found very difficult to keep the mouth clean, and the patient expressing a desire for some eggs and milk, it was given to him; this collected so in the inside of flap under the tongue, that it was found almost impossible to keep the wound clean, the flaps at the edges commenced sloughing and the stitches gave way. I cut off the sloughy parts, cleaned the mouth out and put in fresh silver wire sutures, and ordered him to have no food by the mouth at all, but to be fed with peptonised beef tea and port wine enemata, he however, gradually lost ground, and died 14 days after the operation.

Post Mortem.—The organs were generally healthy. The lungs were slightly pneumonic at bases, and contained a quantity of muco-purulent frothy fluid. The back of the tongue, pharynx and tonsil were nearly healed. The wound generally looked sloughy.

Case III.—N.M. ætat 43. Epithelioma of gums and jaw, secondary to epithelioma of lip, was admitted to the Cancer Hospital, May 3rd, 1885. History: Twenty years ago had a small warty growth on right side of lower lip, which was removed. There was no recurrence for thirteen years when another growth sprang up in the cicatrix, the patient took but little notice of this, and had nothing done to it for four years, when it had grown somewhat, and being troublesome he went to Ipswich Hospital, where a semi-circular piece of the lip was removed and the wound healed. The growth, however, returned in nine months, when he was advised to consult Dr. Fell, who applied caustics to it several times with but little result. The patient then thought he could burn it out for himself, and he applied a paste made of the chloride of antimony, with the effect of eating away a considerable piece of the lip and affecting the gum.

Family History.—Sister said to have died of cancer. No other relatives affected. No history of Syphilis or Phthisis.

Present State. There is a gap in the lower lip a quarter of an inch wide and half an inch deep, situated opposite the

right canine tooth, the gums are thickened and hard, and there is a nodule on the inside of the cheek.

The parts were freely removed and brought together with hare-lip pins, and the wound healed quickly and well.

Three months afterwards he returned, having noticed a swelling of his lower jaw on the right side, and suffering most violent neuralgic pains.

Present state. There is a swelling just beneath and slightly in front of the right inferior maxilla, about an inch from the symphysis and slightly posterior to the old cicatrix.

It has to the naked eye the appearance of an abscess about to burst, but to the touch it is firm though elastic. The swelling is about the size of a walnut. The teeth above it and to either side are loose and apparently pushed up from their sockets, there is a slight purulent and very offensive discharge into the mouth. There is a spontaneous fracture through the jaw at a point between the bicuspid and molar teeth, the posterior portion of bone being quite loose. There is no ulceration of the gums and no enlarged glands.

As the disease was extending and causing much pain, I determined to remove the right half of the jaw, which was done without difficulty. On dividing the symphysis of the jaw with the bone forceps, it was found to be quite soft and spongy, and the disease was then discovered to extend considerably over the left side of the bone. It was then decided upon consultation with my colleagues to remove the remaining half of the jaw, which was done.

The man was fed entirely with the œsophageal tube for some time, and he made a good recovery. Microscopical examination of the growth proved it to epithelioma.

Operation, May 17. The lip was divided down the centre and the vessels at once secured; an incision was then continued from the end of the first along the the under surface of the jaw to the angle, the flap then formed was dissected from the diseased structures. The jaw was divided rather to the left of the symphysis with bone forceps, and the right half of the jaw was removed. There was pretty free hæmorrhage from the facial and other vessels which were divided. This was easily and quickly controlled

by the clamp forceps and the vessels ligatured. The disease having been found to extend considerably into the remaining half of the jaw it was deemed advisable to remove this also. I endeavoured to do so without making another incision along the edge of the jaw, but on applying the lion forceps to depress the jaw it broke close to the angle, evidently being weakened by disease, it was then found necessary to make an incision in continuation with the one on the opposite side as far as the anterior border of the masseter muscle, taking care not to divide the facial artery, the ramus of the jaw are then seized with lion forceps and depressed, the attachment of the temporal muscle divided and the condyle disarticulated. Some troublesome hæmorrhage occurred, caused apparently by the tearing through of a arterial twig close to the internal maxillary artery, this was secured, the lip was brought together with hare-lip pins and the flaps by silver wire sutures, a free drainage being allowed at the lower angle on either side. The mucous membrane of the floor of the mouth was carefully stitched to that of the cheek, and the frenum of the tongue fastened with silver wire suture to the mucous membrane of lips. The tongue was secured by a silk ligature passed through its tip and fastened by means of a strip of sticking plaster to the forehead, the whole wounded surface being freely dusted over with iodoform powder, the patient was then taken to bed.

May 18th. Passed rather restless night. Temp. 99.4 ; Pulse 136 ; Resp. 16. Sat up in bed for his wound to be dressed and expressed himself as being better and freer from pain than he had been for a length of time. The mouth was thoroughly syringed out with weak carbolic lotion. The drainage tubes were carefully cleared and the wound dressed with dry sero-sublimate gauze. He was fed entirely by means of the gum elastic catheter and funnel passed over the back of his tongue, with strong beef tea, eggs and milk and had six ounces of brandy in the twenty four hours.

May 19th. Wound dressed and mouth syringed out. A point on the lip and chin, on the right flap close to where the original operation was performed, this morning has a gangrenous appearance. Temperature 102.5 ; ordered two grains

of quinine three times a day, the brandy was discontinued and port wine substituted.

20th. Wound looking healthy with the exception of the lower angle of the anterior border of the right flaps which will evidently slough. He has a flush over the right side of nose and cheek. The right eye also looks bloodshot and inflamed. Temperature lower; sits up in bed very much stronger. Bowels opened regularly since the operation.

The ligature was removed from the tongue to-day.

22nd. In the median line extending from chin upwards to the extent of about an inch, and a half an inch in thickness is a blackened patch of skin which has sloughed. The wound is suppurating very freely, the whole of its edges being bathed with pus. Temperature 98.8; Pulse 84; Resp. 22.

24th. Slough at point of chin cut away, the edges of wound pared and brought together with silk sutures.

Wound was dressed with carbolic oil dressing and Gamgee's pads, being previously well dusted over with iodoform powder.

24th.—Another piece of slough removed in connection with the old cicatrix.

The patient from this point continued to improve, he was fed entirely by means of the gum elastic catheter until June 3rd, when he was allowed up for a short time.

On June 10th, he took a little fluid from a feeding cup, being able to swallow fairly well; and on July 23rd, nine weeks after the operation, he was discharged, being then quite able to feed himself and the wound healed.

On section of the bone it was seen to be of a dull, whitish colour, of somewhat spongy consistence, easily cut into with a knife in parts, but harder towards the margin. Microscopically large masses of squamous epithelial cells were seen here and there forming the typical bird nest groups, these cells were intermixed with spindle cells in a firm fibrous stroma.

The man has presented himself from time to time at the out-patient's room, and has continued to improve in health, there being no sign at present of any return of the disease.

REMARKS.

These three cases fairly represent the different manner and

degree in which epithelial cancer may attack the lower jaw, secondary to the disease affecting the gums, or other adjacent parts.

Thus, in Case I., the disease appears to have commenced at the floor of the mouth, extending forwards to the gums and from thence attacking the jaws; by free excision of the diseased parts the man was freed from the disease, and could eat well for nearly eighteen months when the recurrence took place in the submental gland, and as he neglected to have any advice for it thinking, as he expressed himself, that it was only a cold, the disease had extended too far when he did present himself for anything to be done for him, and he died about two years after the first operation.

Case II. In this case the disease seems to have commenced in the gums themselves, and to have extended to the surrounding parts. The operation was undertaken at the wish of the man himself as he suffered most acute agony, and the effort of swallowing was attended with so much pain and distress that his life was made most intensely miserable, and he was gradually sinking from inanition.

This case would have done well, I think, if the patient had been fed with the œsophageal tube, and had not a portion of the flaps unfortunately become gangrenous. He died from septic pneumonia.

Case III. is one of the very greatest interest in the first place, from the history which had extended over a period of twenty years, when he first had a small warty growth removed, and this freed him from the disease for thirteen years, when another growth sprang up in the cicatrix of which he thought nothing, and allowed it to remain unattended to for four years, before it was removed by the knife, it very soon returned again, when caustics were applied to it for some considerable time, with the result of only causing more extension of the disease, before it was again freely removed by the knife, after which the lip healed well and there was no return of the disease in this quarter. But the disease seems to have extended to the jaw, and progressed with most rapid strides to infiltrate the whole bone.

Excision of the whole of the lower jaw is fortunately by

no means a common operation, and one that should be very rarely attempted, as the patient, even if freed from the disease, is in a most uncomfortable position, being able to eat nothing and his speech very indifferent.

The dangers after the operation are great through the liability of the tongue dropping back, and causing asphyxia.

In this case I took a great deal of care to secure the mucous membrane of the frenum of the tongue to that of the lips, and I fed the man constantly and freely by means of the elastic catheter and funnel, whereby his strength was well maintained.

I did not anticipate that the disease had extended throughout the bone, otherwise I certainly should not have operated in the manner I did, as I do not consider it at all necessary to divide the lip in complete excision of the lower maxilla, on the contrary, I think had I not done so in this case I should have had no gangrene of the flaps, as undoubtedly this was caused by the blood supply being cut off from that portion of lip between the incision and the cicatrix of the previous operation on the lip. If this man continues to do well I hope that some of my dental friends will be able to set him up with some form of artificial jaw, which will improve his personal appearance, and probably his speech, although I cannot hope that they will succeed in fitting anything that will enable him to masticate food.

EMERGENCIES IN ANÆSTHETISING AND HOW TO TREAT THEM.

III. CHLOROFORM.

By DUDLEY W. BUXTON, M.D., B.S., M.R.C.P.

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Chloroform being very portable and requiring the simplest possible apparatus for its administration is still commonly employed in England, although its dangerous characteristics have been well pointed out pretty often.

INJURY TO CUTANEOUS SURFACES.

Chloroform is a powerful rubefacient and vesicant if allowed to fall upon the skin or mucous membrane and the evaporation checked. It often happens that the chloroform when given on lint is allowed to drop upon the lips, nose, or chin, and so causes blistering. When this occurs the parents of children are liable to attach the blame to the administrator; nor are the victims themselves, if grown up, more favourably impressed by your skill, if upon returning to consciousness they discover their lips and cheeks sore and smarting. In the use of some inhalers a similar mishap may arise, and certainly in the case of Junker's Inhaler one can easily spray chloroform in a particulate form not only over the face but also into the fauces. Should this last event happen, it may cause dangerous spasm. To prevent blistering by chloroform it is wise to carefully anoint lips, chin, nose and cheeks with a little vaseline, this effectually obviates any untoward results even if a drop or two of chloroform does by any accident fall upon your patient's face.

SYNCOPE.

Chloroform may kill your patient even at the very outset of your administration, and this terrible possibility should be ever in front of your eyes when you employ chloroform.

Syncope—failure of the heart—occurring at the outset of chloroform administration, probably is due to fright or to the pungent vapour of the chloroform itself. Fright, it may be of the impending operation, or, and perhaps even more frequently, of the dangers of the chloroformisation itself, is quite sufficient to stop the action of the heart. It is advisable, therefore, to encourage your patient, and avoid any manœuvre which is likely to perturb him or excite his latent fears. The demeanour and cheerful confidence of an expert chloroformist will do much to restore flagging confidence and to enable the patient to tide over his period of panic. The pulse should always be kept under observation, and any marked weakening or intermission with irregularity should make one on the watch for impending heart failure. Again the colour of the patient's face, blueness of the ears, lips, and palpebral margins means danger. If these symptoms appear, there is great fear that

syncope will almost instantly follow them. The heart's action will stop and respiration cease, cyanosis rapidly spreading over the whole face. In this case your measures must be prompt and unhesitating. As your patient will be in the recumbent posture, (the sitting posture is always a most dangerous one in which to commence the administration of chloroform,) you can at once commence your restorative measures. The head must be allowed to fall back and a pillow or cushion be placed beneath the chest. This last measure is one of prime importance, although not usually practised or even insisted upon by teachers. The apex of the tongue is then to be firmly seized by ringed forceps which, by the way, ought in all cases to be at hand when anæsthetisation is being carried on, and drawn well out of the mouth. This clears and straightens the air passage and prevents the epiglottis falling over the glottis and so occluding the rima glottidis or laryngeal chink. But this traction upon the tongue seems also to subserve another purpose, at least so Sir Joseph Lister¹ holds. For, even when the air passages are free from impediment he finds that the action upon the tongue induces respiratory movements, although artificial respiration is not practised. Kappeler, a German writer upon Anæsthetics recommends that a sharp hook be inserted below the hyoid bone, and then used to lift the larynx upwards and forwards. If this method, of which I have no personal experience, be carried out, I should suggest that the sharp hook be employed to make the requisite aperture, and then replaced by a blunt hook. Artificial respiration is then promptly to be performed, and in the way described in my paper upon "Emergencies under Nitrous Oxide Inhalation" with, however, one additional manœuvre. This consists in pressure being made below the costal edge on the left side so that the heart may be mechanically excited to action. Friction communicated by the hand with or without some stimulating liniment should be made over the precordial area while the thorax is flicked sharply with the edge of a wetted towel. Schirmer² has found that

¹ See Article Anæsthetics by Sir Joseph Lister, in 'A System of Surgery,' by Timothy Holmes, F.R.C.S.; 3rd Edition.

² Centralblatt f. Augenheilkunde, Feb. 1881.

a roll of bibulous paper steeped in Liq. Ammonia (not the strong liquor) introduced into the nostril will recover patients from chloroform narcosis since as he asserts the Trigemini nerve retains its conductivity longer than any other nerve. Now how long are we to keep up artificial respiration? Dr. Struve³ says for two hours, and I believe he is right, for I am confident from my observations upon animals that the heart can be recovered a long time after all life has apparently left the body. I have seen animals given up as dead, and with no external evidence of cardiac action, yet upon post mortem examination the heart was found still capable of feeble flickering movements which probably would have developed into rhythmic contraction had restorative measures been persisted in. Nélaton long ago advised semi-inversion of the body as a means of restoring animation. This practice in the treatment of chloroform toxæmia was urged strenuously by Marion Sims, and many cases are now on record when life has to all appearances been saved by it. Schuppert⁴ has narrated several instances of recovery from apparent death from chloroform by total inversion. The method in the case of children is simple enough, the thighs are gradually raised until the head hangs the lowest point of the body. Adults are more difficult to manage, but usually one or two assistants will by raising the legs over their shoulders be able to completely invert the patient. I am far from pinning my faith to inversion, and must again urge the necessity for maintaining artificial respiration whatever else is done. These measures are then applicable to the syncopal attacks which supervene during the first attempt at inducing anæsthesia.

VOMITING.

When vomiting occurs during the administration of chloroform, two untoward events are likely to happen; the patient will run the risk of drawing vomited matters and fluids into his air passages, and he will further so far "come to" as to make the continuance of the operation one at least of difficulty, and probably one of danger, since the patient will be exposed

³ Deutsche Medicinal Zeitung, Feb. 1885.

⁴ See Dr. Struve's Paper op. cit.

to "shock" while his vitality is depressed by the chloroformisation.

It will then be a great matter gained if we can discover when sickness is likely to come on, and if we can prevent its occurrence. There are two signs which I have noticed are pretty constant indications of the oncoming of vomiting, and these are failure of the pulse and dilatation of the pupil. However, it is unfortunate that precisely these two signs occur before heart failure and indicate a condition of collapse. This predicament, to be doubtful as to whether to stop the administration of the chloroform or to push it, is just one of those which proves how impossible it is to teach the rules and cautions needful in chloroformisation, and how essential it is that a man should learn his work as an anæsthetist by experience and careful personal observation. When vomiting is about to occur your patient will commence to swallow air, a sign which will recall to you the physiology of the act of vomiting. Vomiting should be checked, and the best means of so doing is to crowd on your chloroform, regard being had, of course, to what has just been said with regard to the possibility of your mistaking the oncoming of syncope for the oncoming of vomiting. As a rule, pushing the chloroform, the finger being carefully kept upon the pulse will prevent vomiting, if it does not, be careful to turn your patient's head and to keep it low, fatal syncopal attacks, have been excited by raising the patient's head to facilitate the act of vomiting. Even during the vomiting it is well to keep up the chloroformising if possible. In operations about the abdomen or about the eye vomiting amounts to a calamity, so that no pains should be spared to avoid its onset, or to check it if it unfortunately supervenes in spite of all your efforts.

STRUGGLING.

When patients are in the second stage of chloroformisation they always struggle, but there are some persons who do so so violently as to cause alarm to the unexperienced. The force, and one might also say fury of their exertions are such that they cause intense congestion of the capillaries, and make the veins of the head and neck to stand out in knotty cords. In such cases it is the greatest mistake for you to remove the

inhaler or lint, the only safe thing to do is to push the anæsthetic so as to take them rapidly from the state of excitement to that of relaxation. Anything which prolongs the stage of excitement and increases the patient's struggles is not only detrimental to him, but is actually dangerous. He exhausts himself and imposes a dangerous strain upon his heart and bloodvessels. In view of this and the evident dangers which may follow if his heart or his arteries are unduly overtaxed, you must never allow yourself to fear pushing on the chloroform.

FOREIGN SUBSTANCES IN THE AIR PASSAGES.

Much of what was said in dealing with Nitrous Oxide Inhalation under a similar heading, applies with equal force to chloroform, so that it will not be attempted to go over the same ground, and remarks will be made only on such accidents which are more prone to occur during a prolonged anæsthesia, such as that induced by chloroform than during nitrous oxide inhalation.

Blood will, during many operations carried on in the mouth, find its way not only down the œsophagus and into the stomach, where it excites nausea and vomiting, but also is liable to trickle into the larynx. If the patient is kept deeply narcotised there is danger that irritation of the laryngeal mucous membrane will no longer excite reflex coughing. It is this reflex coughing which acts as our safeguard, and enables our patient to clear his air passages. So that it is advisable to keep our patient only just 'under' in such cases, and from time to time turn his head that the blood may run out of his mouth. Long handles with small sponges fixed to them should be handy in these cases, and be used for rapidly mopping out the pharynx. A method has been advocated in Germany, which consists in placing the patient upon his back, and inclining the operating table so that his head is lower than his feet. This effectually prevents blood running down the trachea, but is very cumbersome and in many ways inconvenient. This plan has not, however, met with favour among English surgeons.

STOPPAGE OF RESPIRATION AND HEART FAILURE.

Chloroform seems to possess a cumulative action, if after

prolonged chloroformisation the quantity of vapour inhaled reaches above a certain percentage it acts directly upon the nervous centres in the medulla oblongata, and paralysing them suspends respiratory movements. This also telling back upon the heart stops its action, and the patient, unless duly cared for, dies. The treatment of these cases is far more hopeful than the primary syncope of which I wrote above, and, if undertaken early enough, will in most cases be crowned with success. Now, as to the recognition of the onset of this danger.

The breathing generally forewarns the observant administrator, should he have allowed too large a dose to have been administered. And, by the way, as the dose of chloroform varies with different persons and under different conditions, it is not always easy to avoid such an overdosage.

The respiratory rhythm becomes altered, there is often a tendency to irregularity, while the natural, full, deep breathing of chloroform narcosis becomes replaced by shallow, superficial respirations. Here and there a breath is missed, or the respirations become grouped into batches of five or six, which are followed by a short pause. Succeeding this stage comes complete stopping of all respiratory movements, or, it may be, abdominal breathing may for a breath or two persist after all thoracic movements have ceased. The pulse will have flagged during this time and will eventually stop, although not until after respiration is wholly in abeyance.

TREATMENT.

At once remove the chloroform and have resort to artificial respiration, without loss of time. The further measures, mentioned under the heading of syncope, are to be called into requisition here, only, be it remembered, that inversion is a dangerous practice in cases of chloroform asphyxiation. The venous auricle of the right heart being already loaded with blood from the asphyxiated condition of the patient, and both it and the corresponding ventricle being overfilled and bulging they will hardly be helped much if you attempt to drain the blood out of the abdomen and lower extremities into the heart. As to emptying the heart into the great veins of the neck, this, of course, is prevented by the valves, and

by the fact that the auricular contraction really commences as a venous systole or sort of paristalsis occurring in the venous bulb. So that inversion is decidedly dangerous. The use of nitrite of amyl capsules has been accredited with good effects by many observers. Each capsule is composed of thin glass and contained in cotton wool. They each contain three minims of nitrite of amyl. When it is desired to use them you pinch one between the finger and thumb, this snaps the glass capsule across, and the nitrite of amyl saturates the cotton wool, and you hold it to your patient's nostrils, taking care, as its supporters naively say, to make a few efforts at artificial respiration, that the substance may be inspired. Nitrite of amyl may do good, but it is difficult to decide whether it is that substance or the artificial respiration, which is the determining cause of recovery from the apnoeal state. When a battery can be obtained which is in working order, faradisation of the phrenics in the neck should be practised. The phrenics run across the neck from without in, entering the chest a little outside the point where the collar bone joins the breast bone.

Acupuncture and electro-puncture of the heart itself, although advocated by some, are procedures far too dangerous to be undertaken, even if they held out much chance of doing good, but they do not, and so are not even to be thought of.

Hypodermic injections of various substances have been commended by many. Thus a syringe-full of ether, injected into the flesh over the heart, will, it is believed, exert a stimulating effect. However, personally I should reserve such treatment for cases in which much collapse, with small, almost vanishing pulse, appears *subsequently* to an operation, evidencing collapse from loss of blood or what not.

Liebreich proposed, but I am not aware whether his suggestion has ever been put into practice, that a small dose of strychnine should be administered hypodermically in these cases, while artificial respiration was being carried on. A solution⁵ for hypodermic injection may thus be made :

Acid sulphate of strychnine one grain ; distilled water forty

⁵ Extra Pharmacopeia, Martindale, p. 247.

minims, and the dose given should be from one to three minims.

CONCLUDING REMARKS.

The further treatment of chloroform narcosis resolves itself into the management of cases of collapse, and these have already received attention at my hands, so that I will refer my readers to the papers in question⁶. The peculiarities of persons, their so-called *idiosyncrasies* are constantly bringing up fresh emergencies and requiring fresh hints as to treatment, but although it would be easy to multiply our directions and cautions, yet it is doubtful whether in this case in a multitude of counsel there is much wisdom. Common sense, the commodity of which an anæsthetist needs a most uncommon share, will in most cases offer a hint as to guidance in small emergencies, and the more cardinal ones have received pretty full treatment.

METHYLENE, AMYLENE, ETHIDENE.

What has been said concerning the emergencies of chloroform applies with equal force to its congeners, amylene and ethidene. Methylene, as I have elsewhere pointed out⁷, is only a mechanical mixture of chloroform and alcohol, and hence its behaviour is quite similar to that of chloroform. The action of these substances is only different from that of chloroform in proportion to their relative strength. If they kill, they kill through the heart, and so the treatment indicated above, under the heading of Syncope, will apply with equal force whether the heart be poisoned by chloroform, methylene, amylene, or ethidene.

One further caution must, however, be entered, and that is, that you see your chloroform is pure and has not been exposed to diffused sunlight. If it has, chlorine will have been liberated, and the pungent fumes of that substance will seriously imperil your patient's safety. Methylene and ethidene are also liable to decompose, so that you must if you employ these substances keep them in well stoppered bottles, and in a dark cupboard which is cool and airy.

⁶ On the After Treatment of Narcosis due to Anæsthetic Agents. *Brit. Journ. Dental Science*, 1884, p. 191.

⁷ Introduction to a Discussion on Anæsthesia Local and General delivered before the British Medical Association at Cardiff, 1885, and see *Brit. Med. Association Journal*, Sep. 20, 1885.

CASE OF CYSTIC TUMOUR OF THE PERIODONTAL
MEMBRANE PRESENTING ANOMALOUS
SYMPTOMS.

BY HENRY E. HARRIS, L.D.S.

It is unfortunately too often the case that obscure nerve symptoms, for the relief of which we are consulted, depend for their causation upon some undiscovered source of peripheral irritation, and these, being overlooked, the patient is treated for some complaint which exists only in the imagination of his medical adviser.

The case which forms the subject of the present paper is an interesting example of this, and exemplifies in a remarkable manner the difficulty which often surrounds a correct diagnosis of intra-alveolar tumours when the usual symptoms do not present themselves.

Mrs. S. æt, 50, consulted me upon July 25th of this year, complaining of the following symptoms: Intense pain over the face, scalp, and occiput, extending down the spine as far as the last ribs, and *upon the left side of the neck*, from the mastoid process to the bifurcation of the two heads of the origin of the sterno-mastoid muscle. This pain was relieved by pressure, and was much increased at night, and about half an hour after meals. About the same length of time after taking food her stomach dilated and became tympanitic, impeding the descent of the diaphragm to such an extent as to produce alarming dyspnœa. Her conjunctivæ were congested and her skin was of a subicteric tint. Before she came to me she had consulted in succession two of our leading physicians, one of whom pronounced it a case of "gout," while the other gave it as his opinion that the liver was at fault, and inculcated a strict attention to her diet. She remained under their treatment for two months, but it is needless to remark without benefit. The thing which troubled her most was an almost entire loss of sleep.

It happend that lately I had been paying considerable attention to cases of nervous deafness, and other neuroses depending upon points of peripheral irritation, located in and

about the maxilla, and so of course my first action was to make a thorough examination of her teeth. With the exception of some general inflammation of the gums the mouth was absolutely normal. No caries. No undue pressure, and on the most careful precussion of each tooth *no tenderness!*

I confess that, equally with the two physicians, I should have been utterly at a loss as to a diagnosis, but for the fact that a case, which had come under my notice some time ago, presented itself to my mind, and owing to two symptoms which it possessed in common with that of Mrs. S., suggested a possible solution. The symptoms were, the pain in the course of the left vagus nerve and the dilated stomach. The case was briefly as follows : The patient, a well-known London physician, had one of his upper left molars extracted, but unfortunately one of the fangs, the palatine, snapped across, and the tip, a piece about quarter of an inch in length remained behind. For two years a sinus remained leading down to the broken bit of tooth constantly discharging pus. The patient all this time suffered from almost constant dilatation of the stomach, with pain in the left side of the neck, and the other signs of general neurasthenia. The piece of fang was extracted, and all the morbid symptoms very soon vanished.

On the following day, bearing this case in mind, and making a more particular examination of the left molar, I fancied that on firm pressure I could detect a slightly different resistance to the instrument when applied to the first molar. Seeing no other solution to the mystery and the patient quite worn out with pain and loss of sleep, imploring me to make any experiment which offered the remotest chance of relief, I extracted the tooth with the following result : Attached to and growing from the membrane covering the fang was a hard, slightly vascular, lobulated tumour of an inch in length, by $\frac{3}{4}$ of an inch in diameter at its broadest part. It consisted of three distinct globes, and extended through the roof of the socket of the tooth into the antrum, and when it was removed, which was a performance of considerable difficulty, an aperture was left through which a probe could be passed into it. After syringing with a solution of carbolic acid, a few drops of a 2 per cent. solution of

cocaine was injected through the aperture into the antrum, and a plug of iodoform wool loosely introduced.

The patient passed a good night and slept for several hours. This had not occurred for two months or more. The following day the pain in the head and back disappeared, and the last time I saw her, only a few days ago, she informed me that she had had only one attack of dilatation of the stomach since the extraction of the tooth.

The case is very interesting from many points. The active dilatation of the stomach was evidently due to continuous irritation of the pneumogastric nerve, conveyed by the connections which exist between it and the branch of the fifth pair, distributed to the pulp of the tooth in question. The attack of dilatation after the extraction of the tooth may be accounted for by supposing that a morbid "nerve-habit" had been acquired which would not suddenly give way, on the removal of the source of irritation.

In the case alluded to of the retention of a portion of fang, the actual irritation was a stretching of the nerve end, which was observed quite fresh and unatrophied after its removal. It may be mentioned that Mrs. S. had never suffered from alveolar abscess, and there was no history of syphilis, which of course, would enter the mind of anyone, hearing that the pain was worse at night. On minute examination of the growth, it turned out to be a cystic tumour.

As one frequently sees a case of obstinate headache, dependant upon an overlooked error of refraction, and therefore cured by the oculist with suitable glasses in an instant, although treated for months by the practitioner with tonics, *et hoc genus omne*, so, I venture to say that I think we shall find many obscure nerve disturbances, depend upon peripheral irritation connected with the teeth, and as I shall have occasion to point out in a future paper on the devitalization of pulps, and the first and second dentition, and the disorder associated therewith.

British Journal of Dental Science.

LONDON, OCTOBER 1st, 1885.

"A MODEL DENTIST."

Probably each member of the profession could indicate the individual, and in the words of Nathan say "Thou art the man." But they are all wrong. The paragon dentist has certain traits and owns to certain excellences which have only lately been revealed. To a talented, if unknown, writer has been reserved the distinguished honour of tabulating the several virtues which go to adorn a model dentist. Being fortunate enough to light upon the lucid remarks of the writer, we hasten to apprise our readers of the desiderata of a model dentist. Surely it is not too much to expect that upon due study of those same remarks, they will at once qualify themselves by careful carrying out of the writer's views, to themselves become one and all "model dentists." It would be a grand distinction indeed for England to be able to modestly claim that *all* her dentists were models. We hope they would be all duly *qualified* models, then the criminal investigation department of the British Dental Association could cease from its painful but laudable prosecutions. It is to a contributor to the *Paris Morning News* that England, and we may add, the world at large, is indebted for having put into tangible form and shape, the ideal of the "model dentist." Let us carefully con the attributes necessary for success in dentistry. He, the successful one, must, we are told, be handsome. Not, handsome is as handsome does, but beautiful for the eye of man to rest upon, and comely. Yes, no doubt the physical beauty does go a long way in making a man successful in most callings, and why not in dentistry? We don't see why the various licensing bodies should not add to their bye-laws to the effect 'that beauty of face and grace of manner is expected from all candidates, not actually in practice before 1878.' A special group of discreet matrons might be told off as examiners and their report taken before the subsidiary subjects, such as knowledge of anatomy, physiology, and dental surgery and pathology are entered upon

And again, why should not advertisers for assistants add to their printed requirements, that only handsome practitioners need apply. But we are a long way off our model as yet. He, the model dentist, must possess 'strong personal magnetism.' This we don't understand unless he is to be a kind of "accumulator," so being competent to work his own electric mallet. If our surmise is correct, the model, although unquestionably a time saving individual is not indigenous in our benighted islands. We don't keep our magnetism concealed about our persons ; but perhaps this magnetic store can be supplemented from without, and yet not damage the model nature of the unmagnetic dentist. 'He must be spotlessly clean, with soft, white hands, always with a faint, but pleasant perfume about them.' Here we are at home, and even unmagnetic practitioners "*hearing*, may take heart again." Of course, a dirty dentist is a horror, but as to the faint perfume, we question whether that doesn't rather suggest the possibility of a whited sepulchre. The cleanest men, and most gentlemen, whether engaged in dentistry or not, aim at personal cleanliness—are the unobtrusively clean. Don't advertise the fact that your hands are free from malodour, or your clients will begin to consider your claims to the possession to clean digits. The most scrupulous particularity in this respect is rightly held dear by dentists, but are there many dirty-handed dentists doing thriving practices? We should like to have a list of them. The next need of the model dentist is an 'odourless breath.' Here again we deem the need a true one. We have even devoted some space to developing the subject. Of course, we know that dentists do sometimes smoke, but do these gentlemen remember that a smoker cannot detect the aroma of his own breath? The caution may not be quite unnecessary in some cases. Although we may not be quite equal to obtaining the particular odour esteemed requisite for the model dentist, *i.e.*, "like the suspicion of air wafted through a vine-covered window in the month of June," yet we can at least, avoid odour-yielding vegetables however savory, and the equally obnoxious morning weeds, then possibly our clients will overlook the absence of the 'vine perfume of a June morning.' *The Paris Morning News*' correspon-

dent describes "my dentist" as lovely, can it be a lady, who has thus incisively portrayed this model dentist? This same gentleman is not only endowed with loveliness, but wears superlatively white flannel jackets, but we presume the material and even the colour are not paramount provided the outward man is in keeping with the other model qualities. In conclusion, we are pleased to find that the model one's charges are high, for luxuries must be paid for, so at least, we in John Bull's Island shall not have to dock our fees in order to bring ourselves into harmony with the Parisian Ideal of a dentist. We may be accused of writing jestingly, but we assure our readers we are in strict, good faith, we are most anxious for the well-being of our professional brethren, and beg with two reservations, to endorse the accuracy of this portraiture of a model dentist. Possibly it is insular education, but we venture to dispute the importance to dentists of the possession of personal magnetism and a breath like the wafted air of June. But stay, we had almost forgotten one other little trait our model dentist ought to lay claim to, it is "a knowledge of dentistry"!

GUTTA-PERCHA CAPPINGS.—Mr. Moore, writing in the *Independent Practitioner*, says he has seen nothing in the journals advising against the employment of gutta-percha as a capping for exposed pulps, while much has appeared urging its use both as a capping and as a non-conductor under metal fillings. He therefore utters a note of warning. It is a well-known fact that gutta-percha possesses sufficient expansive qualities to make it a valuable agent in separating teeth. We have all observed this property, in a marked degree, when buccal cavities have been filled with it. No matter how carefully the work has been done, or how neatly and smoothly the material has been packed, a few months later we are sure to find it bulging from the cavity to such an extent as to make us feel as if we had used at least one-fourth too much material. This same change takes place when it is used over an exposed pulp, and confined under a filling. Sufficient pressure is exerted to produce inflammation and death of that organ.

When used as a non-conductor under large metallic fillings it will, in almost every case, expand to such a degree as to force the filling out, even if it has to fracture the walls of the tooth to do it. We can most heartily recommend it as a root-filling, but in such cases the roots should be filled with gutta-percha, and the pulp-chamber with gold, or some of the cements.

A CASE IN PRACTICE.—Dr. Ives narrated the following case before the Dental Society of the State of New York.

A gentleman on his way to have the first superior molar extracted, thought better of the idea, and came to me for relief. Having received it, he volunteered the following statement: Some four years before he had put himself in the hands of a New York dentist, who found an exposed pulp in this tooth. It had a large gold filling, but the applications for destruction and treatment were made through a cavity in the posterior approximal surface. In due time the dead pulp was removed, and an attempt made to enter the root canal. The palatal root offered but little difficulty, but the buccal was more of a task. After many trials the dentist told him they were entirely closed with secondary dentine. The palatal root was dressed, and a temporary stopping inserted. From that time on the tooth was a constant source of uneasiness. Some time after, the patient went to another dentist, who drilled through the crown filling, obtaining direct access to the root. Treatment followed with but little relief, and it was finally filled with gutta-percha. This was the history when he came to me. I removed the entire filling, and enlarged the opening until I had free access to all the roots. I found the entrance to both buccal roots, and followed them until the freedom from odour convinced me there would be no more trouble. The palatal root was the seat of the whole distress. It was stubborn under treatment, and Carbolic acid or Iodoform left in it for a few days would lose identity. I went through the foramen with a drill made from a Donaldson bristle. A discharge of pus followed, and from that time it has continued to improve, and I hope will be soon in a condition to fill permanently. The Cosmos reproduces this case.

FINE ART AND DENTISTRY.—It is a very healthy sign, that the Cambridge Meeting of the British Dental Association showed more than merely professional advancement. Its art collection, which was distinctly good, and will we presume, if repeated become still better, indicates the social traits, and social advancement of the profession. A man who money-grubs as a dentist, is not likely to take much interest in a Guido or a Linnell, and much less so to touch canvas on his own account. *The Association Journal* accepts as a sign of growing respect for the dental profession, that the papers have noticed the meeting, we think the fact that dentists are able to bring together the proofs of culture and refinement, such as was offered at the Fine Art Collection at Cambridge, are worth more than all the newspaper puffs in Christendom. but then we are not in the swim.

PALLADIUM AS A FILLING.—Through pressnre, incident to a "Student's Number," we could not notice this subject in our last issue, we do so now with pleasure. Mr. Stringfield's communication which will be found in our correspondence column, has brought up an important subject. We have over and over again spoken of "Collective Investigation," and now it seems to us, that if our correspondents would take up the subject of palladium fillings, they might do themselves and the profession a service.

As our correspondent says, so many fillings are used, and yet no one seems to be quite sure which is the best. Now, if dentists would use several fillings systematically, and note their results which could be easily epitomised and sent to us, something like progress would be made. We commend the matter to the profession, and hope they will see it in the same way as we do.

THE AMERICAN DENTAL ASSOCIATION.—Its twenty-fifth annual meeting has just been completed, while the fifth of the British Dental Association has concurrently be brought to a close. The American Association has achieved a decided

success. Held at Minneapolis it attracted a very large attendance, and elicited some first rate papers, some of which we hope to reproduce for the benefit of our readers, while the character of the discussions held was unusually high.

HOW TO USE MENTHOL.—Rosenberg employs a twenty or thirty per cent solution of menthol, and finds its use quite as efficacious as cocaine, although less lasting. It may be painted over the mucous surfaces or injected. If injected, care is requisite lest an abscess form at the point of injection.

AMERICAN VIEWS ON DENTAL CARIES.—Dr. Morsman commences in the September issue of the Dental Cosmos, a series of papers on dental caries. He attacks at first, what he calls "Predisponents," which being interpreted means—Predisposing causes. We shall hope to give our readers an account of his views as his papers run on, for although, some of the profession in London know all about dental caries, there are still some persons who are honest enough to feel they do not know much about the pathogenesis of dental caries.

CHLOROFORM AND WATER AS A HEMOSTATIC AGENT.—The Journal de Médecine speaks highly of this mixture in the following proportions: Chloroform 2 parts, water 100 parts. It is claimed that it acts with a rapidity that is truly marvelous; it has not the slightest disagreeable taste; it has no escharotic action; it is always at hand and made instantly; its cost is very slight; and there is nothing disagreeable in its application to interfere with the surgeon. In all operations upon the mouth and throat. It is recommended to use this alone as a hemostatic. Recently in moving a sequestrum from the inferior maxilla, which was of the size of a large chesnut, by its use no blood was lost in what is usually a very bloody operation. A simple washing arrested all tendency to hæmorrhage. In tonsillotomy, simply gargling the part or using the atomized spray is sufficient to prevent the loss of blood.

Abstracts of British & Foreign Journals.

DEUTSHE MONATSSCHRIFT FÜR ZAHNHEILKUNDE.

CYST ON ALVEOLAR PROCESS OF THE UPPER JAW.

By HERR RITTER, Dentist, Berlin.

Herr Ritter narrates the following case :—

Fraulein Oshen, 25 years old, came to Herr Ritter in August last year, with a cyst about as large as a cherry on the alveolar process of the upper jaw, in the neighbourhood of the central incisors. In June, 1883, the patient said, she had had the upper incisors partially removed to make room for two artificial teeth. The year following her face swelled, the swelling arose from the roots of the before mentioned teeth ; this swelling disappeared in the course of the next four weeks, twice again to reappear ; in the middle of July both roots were extracted in the Royal University Policlinic. The incision made by Herr Ritter brought forth half a teaspoonful of gall-like material ; he forbade the setting of the dental mouthpiece, and sought, through cauterizing, to prevent the return of the cyst. On the 4th September the patient again came to him, showing a cyst of the same size in the same place. Another incision, made by him in the wall of the cyst, brought again a half teaspoonful of gall-like matter, mixed with blood. The blood-red colour was in consequence of the incision, the bone partition of the cyst was removed, the opening was about the size of a sixpenny piece. The operation took place under chloroform narcosis. With the probe, in an irregular hollow, was found a kind of pyramid, with its point directed to the right, the walls of the pyramid were formed of the bare bone. From the point of the pyramid a very fine probe pressed into the antrum of Highmore. The wound was stopped with cotton wool dipped in iodized æther, and this stopping, after syringing the surface of the wound, was renewed every four days.

As the decreasing of the hollow took place very slowly, four weeks later, under chloroform narcosis, the bottom of the

cyst was taken away with a chisel. Then the healing proceeded more quickly, the stopping being changed every four days as before.

In the place of a cyst a chink gradually formed, which reached from the upper great incisors and the upper small right incisors to 2. cm. in the roof of the palate. This defect which injured speech and digestion was remedied by Herr Ritter with an artificial piece which, after the manner of an obturator, closed the chink, and left free space for advancing granulation. Fraulein Osten, who came to Herr Ritter for fourteen days, has become quite accustomed to the piece.

CORRESPONDENZ BLATT FUR ZAHNARZTE. **CASE OF DENTINE FORMATION CONSEQUENT** **UPON NEURALGIA OF THE TRIGEMINUS.**

PROF. STOFFELLA, Vienna.

The following are curious cases brought to our notice by Prof. Stoffella, in which affections of the Trigemini have apparently given rise to some pathological changes in the teeth, a phenomenon, he states, not hitherto met with in the course of his practice.

Some time ago the Professor was consulted by a young lady of twenty-two on account of violent toothache from which she had suffered for five months. The patient said the pain first began in the right eye tooth, afterwards changing its position and returning again to the same place, it became so intense that the patient had the tooth extracted. After the extraction a short respite from pain ensued, which was, however, followed in a few days by a worse attack than before, this time the pain arose chiefly from the left eye tooth. The patient was obliged to have this tooth extracted, and after four molars. These teeth upon examination evinced no signs of diseased roots, and were so slightly affected by caries that it was impossible to account for the violent pain by attributing it to so slight a cause. The extracted teeth had all been stopped. The dentist upon extracting the fifth tooth broke it and discovered in the interior a dentine formation. Upon this he broke all the formerly extracted

teeth except the left eye tooth, and found a similar formation in each. The same thing occurred on opening the sixth and seventh teeth after their extraction.

But although seven teeth had in the course of five months been extracted, the pain was unassuaged, and the patient was advised to consult a physician, and consequently sought the assistance of Prof. Stoffella. He describes her as a pale but well-developed woman, wearing an expression of suffering on her face ; her heart and lungs normal ; pulse 72, rather weak, two molars were besides the above-mentioned teeth, lacking which had been removed some years before on account of superficial caries, others were perfectly sound and no open caries appeared in any. At this time the pain arose from the right lower second molar, and the right upper second incisor, both of which were stopped, and the incisor was on the edge of the outer side, somewhat sensitive on account of a very small hole about the size of the head of a darning needle.

The patient who had been married about four years had been seriously ill the previous year in consequence of a miscarriage caused by some violent emotion. She belonged to a family also many members of which suffered from nervous diseases.

The Professor examined two of the extracted teeth himself, and found both superficially carious, especially the lower molars. In examining the broken off molar, he remembered the above mentioned change in the eye tooth, and found in it the same new formation of dentine nearly filling up the pulp cavity, stretching upwards towards the root canal. This dentine formation was firmly fixed in shape like a pear, and is by some called an odontome.

The other (eye) tooth was examined by Prof. Wedl, who is learned in the physiological and pathological anatomy of the teeth, and he found, after the tooth was split, in its interior, not as in the others a dentine formation, but a more recently changed condition, a thick layer of chalk deposit in the pulp, in the shape of a tooth, and partly imbedded in the windings of the vessels.

Having proceeded so far, Professor Stoffella endeavoured then to discover the nature of a disease which caused so much

suffering. He says that the anatomical changes met with in the teeth in youth bear a striking analogy with those changes which are so often met with in individuals well advanced in age and which are called the changes of age. With this patient such an explanation on account of her youth was impossible, moreover, changes in teeth consequent upon old age are unaccompanied by pain. A more difficult question was whether the dentine formation found on the teeth might be attributed to caries. The teeth which were extracted were it will be remembered, slightly carious, and it is known that through caries, even when merely superficial an irritable condition of the pulp is created, and in consequence of this a growth of the dentine is excited, not merely on the surface of the teeth, but also in the deeper parts of the pulp.

The Dentine formation found on the teeth of this patient must have arisen from some other cause. It seems very probable that the disease was not a local idiopathic disease of the teeth, but had a deeper foundation. There must have been a cause of disease to excite in all the teeth so identical a disturbance of nourishment; only in such a case could it happen that amongst seven extracted teeth six of them should manifest the same symptoms besides many remaining in the mouth, all of which were equally painful, so it must be concluded that these were diseased in the interior in the way as those already extracted.

Often the Professor had arrived at the conclusion that there was a general want of nourishment in the teeth, the cause of the latter still remained to be discovered. In relation to this the attention must be directed to the trigeminus nerve, as this nerve certainly provides for the teeth collectively. The nerve was examined and was found to be affected by neuralgia trigemini. The frontal as well as the supraorbital point, the zygomatics and infra-orbital point and not less the nerves in the lower jaw, particularly where they come in contact with the lower jaw canal were all very sensitive to pressure. Although the patient did not suffer from the usual symptoms of neuralgia, such as headache, tears in the eyes, etc., yet this is easily explained by the fact that the first branch of the trigeminus remained free, and only those nerves

of the second and third trigeminal branches in connection with the teeth were affected.

Taking every symptom into consideration, the Professor came to the conclusion that the diseased state of his patient's teeth arose purely from nervous disease. The circumstance that the patient was very anæmic, and came of a family subject to nervous disease was more than sufficient cause for such an affection.

Another reason for believing the disease to be purely nervous, was that soon after conjunctivitis appeared which could only be put down to the trigeminus. The therapeutic effects showed the accuracy of the professor's treatment, and he gives a short list of means used—*Liq. Arsenicalis* is Fowleri and phosphate of iron with a soda salt, besides which morphia was several times injected. This treatment was followed by results exceeding the greatest expectations, the patient hitherto unable to sleep without a dose of chloral hydrate after a few days use of bromide of potassium was entirely free from pain. After a time the treatment was suspended, owing to dyspepsia and sleepiness and other causes, but finally, the patient was so far cured as to be comparatively free from pain for a week at a time, and even when the pain returned it was never so violent as formerly. A lasting cure ought to be effected as soon as the anæmia to which the patient had been subject for years disappears. Professor Stoffella has attempted to prove that a growth of dentine on the teeth may arise from neuralgia trigeminus. The above case and another for which we have no space, do not afford sufficient ground for decided conclusions in the Professor's opinion, which must be based on experiments and anatomical or chemical researches.

He says that however highly he may regard the method of enquiry adopted by the modern medical profession, he cannot believe that all questions in pathology can be settled by animal experiments and instrumental means of inquiry. There are many cases in which only clinical observations and therapeutic consequences can bring the desired enlightenment, and to these cases belongs trigeminal neuralgia and its relation to dentine on the teeth. Whether Prof. Stoffella's observations are correct, farther experience will show, in the mean time he has done his best by drawing attention to the subject.

INDEPENDENT PRACTITIONER.**THE TEETH OF DEAF MUTES.**

By J. HOWARD REED, D.D.S., M.D.S.

Deaf mutes are found in all ranks. Many exhibit considerable intellectual power and ingenuity. The immediate cause of congenital deafness is, malformation, misplacement, a faulty arrangement, or want of the hearing organs ; lack of constructing material, a thickening of the membranes, or the inner chamber of the ear being filled with mucous or bloody matter instead of the limpid fluid which ordinarily exists there, also rank as causes. Accidental deafness may be caused by mechanical or local means. About one-half of cases of accidental deafness are due to scarlet fever. This arises by inflammatory action upon the auditory nerves and that portion of the brain to which they are attached, ending in insensibility of the nerve to sound.

The largest number of congenital deaf mute children are born of deaf mute parents, or about ten per cent. of the births under the named circumstances are deaf mutes ; the next largest number of congenital deaf mute births come from a blood marriage of the parents ; third, that the third largest number come from one of the contracting parties to a marriage being a deaf mute, and in this latter case there is only a slight tendency for a transmission. Deaf mutes have quick and violent tempers, and are jealous and sensitive.

He gives first the case of James Mitchell, a boy congenitally deaf, dumb and blind ; the only sense of sound that he could recognise was that conveyed to him through the medium of the teeth. As a child he would strike upon his front teeth anything he could seize. This he did for hours, and seemed gratified if the article was metal, or a hard substance that gave a sharp sound. His favourite play was to allow a key to vibrate between his teeth, suspended from a string. A musical snuff box being given him and placed between his teeth pleased him. When the music ceased he would examine with his tongue and fingers, with great curiosity. It is a common thing among deaf mutes to awaken the sensations through the vibrations of sound caused by metallic

substances coming in contact with the teeth. The teeth present nothing striking. The dark-bronze yellow tooth will always be associated with the pronouncedly bilious temperament. A bluish-white tooth points to the nervous person, and the sanguine temperament goes with teeth of a cream colour. The quality of the teeth is slightly below the average. Take twenty per cent of the deaf mutes, and you will find some curious forms given to the teeth. One will present a mouth with the superior incisors perfect in every respect, and having the lower incisors perfect in colour and shape, but dwarfed to one-third their normal size. A second patient will present with four stumps of centrals, and having the laterals towering up like guardian giants. In one or two mouths almost a perfect picket-rail fence has been seen, extending from the median line to as far as the first or second molars, with the cusps of the bicuspid and molars like a chalky formation. Certain scarlet-fever marks on the teeth cannot be mistaken; frequently the bicuspid will show the marks on the four or eight teeth, presenting that yellow or light brown colour, much as if the teeth was entirely robbed of enamel. Three or four cases have been observed in which the six anterior teeth, both upper and under, presented the appearance of graduated steps. The face has a stolid look, its muscles are well developed, probably due to the facial attempts at expression. Peculiarities in the articulation are often present. Eruption is often delayed on the average about two years in the bicuspid, and all the teeth are more or less delayed in their appearance. Decay of the teeth occurs, but it is slow. It is noticeable that the fissures in the back teeth are ground perfectly smooth, are obliterated, or only slightly distinct, or the front teeth show exceeding great wear, and frequently the entire set of teeth is one continuous row of flat ivory. Irregularities are not more frequent among deaf mutes. Their teeth are very sensitive. In artificial work it is necessary to study strength with the maximum of bulk, as it is essential to have strength to withstand the great strain to which deaf mutes subject their teeth, and as the matter of space for the vocal organs need not be taken into account. All heroic treatment he adds, must be absolutely avoided.

THE USE OF CLASPS.

By DR. L. P. HASKELL, Chicago, Ill.

While there are some who condemn the use of clasps entirely, I must say that there are many cases where they are very useful if not absolutely necessary, and other cases where they are absolutely indispensable if you consult the patient's comfort.

But the clasp must be properly adjusted. Platinum alloy, not too stiff, not too thick, not too wide, nor too narrow. An average width of $\frac{1}{8}$ inch, guage 24.

It should always be adjusted to the *plate in the mouth* with tough wax (such as teeth cards); remove and insert in plaster and pumice just enough to cover clasp and about an inch of surface of plate. It should be soldered at one point, and not more than 3-16 of an inch, so the whole may be as free as possible in its movements. The point of soldering should be, if possible, at the centre of lingual side of crown. The plate should extend $\frac{1}{4}$ inch back of the point of soldering where there are no teeth to be put on it back of clasp. If the clasp can extend only part way around the tooth let it be, if possible, on the posterior side.

The second bicuspid is generally the most desirable, and then the first. Patients must be enjoined to keep them clean. Very few teeth are injured if thus adjusted and kept clean, and infinitely preferable to the enclosing of the entire tooth with a gold band, often unsightly in appearance; the cement with which they are fastened, in many cases disintegrating, and the fluids working in and decaying the tooth; and then in addition the tooth thus fastened to, becoming permanently loosened in the jaw, and last, though not least, a denture, a portion of which becomes absolutely nasty.

JOURNAL OF BRITISH DENTAL ASSOCIATION.

A CASE OF ALTERED SALIVARY SECRETION.

By CHARLES S. TOMES, M.A., F.R.S.

From each parotid duct there exudes a thick purulent fluid, which, to the naked eye, as well as to microscopic examination, presents all the characters of "laudable" pus; the mouth is somewhat dry, and the whole mucous membrane

has a marbled, reticulated look ; the pus is odourless, contains no organisms, and is strongly alkaline. The breath is peculiar and unpleasant in odour.

A drop of this parotid saliva failed to convert into sugar a very small trace of starch, whereas a similar quantity got from a healthy mouth did so readily. The patient asserted this state of things had existed for nearly twenty years, and that it dated from a severe attack of typhus fever, in the course of which there had been what she described as "an abscess" in both parotid glands. There was no unusual amount of caries, and the secretion of submaxillary glands was apparently healthy ; the patient's general health and her digestion were excellent, no inconvenience arising from her disease.

A notable quantity of pus exuded from the ducts during manipulation ; so that it would appear that it is quite possible to go on swallowing pus year after year, and probably to dispense with the ordinary functions of the parotid saliva for a like period without any apparent detriment.

Mr. Tomes remarks "It might well have been supposed that the viscosity of the oral secretions would have ensured the speedy destruction of the teeth by caries, but, as has already been mentioned, this had not been the case. The teeth were, judging by their colour and form, typically strong, and it may be that to their original excellence they owed their capability of resisting what, according to all analogy, one would suppose to be very unfavourable influences. Whether the original illness was really typhus, or was typhoid fever, I could not satisfy myself by inquiries, but the account given of the epidemic in which she suffered, would rather point to its having been typhus.

Literary Notices and Selections.

THE INADEQUACY OF OUR RESOURCES IN OPERATIVE DENTISTRY.

F. W. SAGE, D.D.S., CINCINNATI.

A few years ago some one invented this maxim for the guidance of operators, "a tooth that is worth filling at all

is worth filling with gold." The saying became the sheet-anchor of many aspirants to high rank among operators. What difficulties had to be surmounted in order to preserve a reputation for unvarying consistency no one who has tried to discard all other filling materials needs to be told. If other evidence of the unsoundness of the assumption embodied in this maxim were wanting, it could be easily supplied by many silent witnesses in the shape of cement, gutta-percha, and other fillings inserted by first class operators. Still the fact remains that desperate measures were for a long time and are still employed to render possible a universal application of the principle that gold is the only suitable material for filling teeth. Device after device was invented to enable the operator to master the difficulties of inaccessible cavities. A strong spirit of emulation among operators sprang up; extraordinary difficulties stimulated to extraordinary efforts to overcome them, and many ingenious appliances and methods were suggested and successfully practiced. As a natural result, a few men in the profession presentiy attained to lofty eminence, by reason of rare success in overcoming what to very many, were insurmountable obstacles to the use of gold foil. A new interest was lent to the discussions in our conventions and associations by the descriptions and demonstrations set forth in detail by these leaders of the profession. Was the adjustment of the coffee-dam in a difficult case a problem offered for solution, some exceptionally gifted operator was usually at hand to rise and explain how he proceeded in such cases. Was the question of returning a clamp in position or of reaching a distant cavity broached, some genius was ready with his special appliance of curious design to make the crooked paths straight. Practical demonstrations upon a patient at the clinic were not wanting, still some problem-solvers content themselves with the use of the blackboard and a bit of chalk. Sometimes the use of an appliance to be constructed in accordance with the requirements of the special case suggested. If upon actual trial, the construction of the suggested appliance was found to be too difficult for the average operator, or if having been constructed it was found to be inadequate to the

end sought to be attained, what of that? The failure illustrated the inferiority of the poor inquirer's practical talent, and redounded all the more to the glory and honour of him who offered the suggestion. A remarkable state of affairs had come about and prevails to-day; to-wit: we find a large body of professional men led on and encouraged by a very small minority of proficient in the use of a filling material which it would seem that few can hope to be able to use successfully. A remarkable state of affairs, truly, that the success of the few should serve chiefly to illustrate the hopeless incompetency of the many! Who is to blame for this state of affairs? Who is to be held responsible for the failure of honest efforts put forth to invent a filling material worthy to supplant gold foil? It would be idle to charge the individual members of the profession with a lack of interest in devising some improvement in this respect. Are any, like Demetrius of old, fearful of endangering their craft? Is the five or ten dollars an hour that dentists receive for packing gold into cavities the real obstacle to the progress of invention? The advocates of a new departure failed to revolutionize existing methods for the all-sufficient reason that they offered no new improvements, no better alternative. They pointed out the shortcomings of the existing methods and to that extent they achieved a success, of a negative character, it is true. They directed attention to the fact that the best operators in gold were not accomplishing all they claimed in the way of saving teeth. It was the bugle's blast calling a halt, in order to inquire whether or not gold foil was to be accepted as the ideal filling material. The statement included in the much criticised affirmation of the "New Departure's" advocate that "in proportion as teeth need filling, gold in the worst material used for filling cavities" would not be ignored or thrust aside. If these image-breakers had simply committed themselves to the opinion that gold foil does not fulfil all the requirements of an ideal filling material and had refrained from expressly encouraging the use other materials already tried and found wanting, they would probably have won many a frank avowal of acquiescence from the very ones who resisted their conclusions.

Looking at the matter from every standpoint the conclusion seems to force itself upon us that the ideal filling material remains to be discovered. Consider for a moment some of the principles involved in the use of gold foil. Direct access to the cavity to be filled must be obtained, even at the expense of healthy, sound tooth-substance. That is a fundamental teaching as regards the preparation of the cavity for the reception of cohesive foil. In how many instances do we find the practice of this principle inadmissible, or being admissible, in how many cases is it highly objectionable? This principle, if literally adhered to, would result in the exposure of many a pulp. At best, free mortising down to the site of cavities, only partly accomplishes the purpose of gaining free access, in numerous instances which might be recalled. The necessity for such a course of procedure is certainly to be deplored. When cements are used the principle is largely modified, to the relief certainly of the patient, at least. We mould cement into cavities with comparatively thin, friable walls, which we would not dare to leave, but would freely cut away were we about to use gold. Twelve or fifteen years ago gold-workers pointed with pride and satisfaction to large contour operations glittering in front teeth. It was called artistic; and yet these operations lacked the very first requisite of perfection in art, which is to conceal art. The novelty of the thing carried us (and our patients too) away with enthusiasm. But the incongruity of a large mass of gold glittering in a front tooth forced itself upon attention after a while, and to-day, persons of cultivated tastes would gladly avoid any display of gold whatever in their teeth. The growing demand is for something closely resembling enamel. We hear with incredulity the avowal of our wealthy patient that he would rather have cement or gutta-percha in his front teeth for appearance sake. We think him niggardly or lacking appreciation of the higher order of dental art, or we attribute his whim to a fear of the rubber-dam and the polishing strip. Admitt hat neither cement nor gutta-percha would meet our fastidious patient's requirements, the fact remains that he objects to the appearance of gold.

But, about the possibility of saving teeth with gold, let us

now inquire. This ideal filling material requires an ideal tooth upon which to exhibit its saving efficacy. Gold is the veriest autocrat. It says to the operator, adapt your conditions to my requirements and I will fulfill your wishes, provided you give close enough heed to such requirements as I may choose to impose later. I pay no attention to the requirements of existing conditions. I dictate my terms. You meet them as best you may. I know that I am accounted stubborn and exacting. What care I for your opinion of me, good or bad? I have one or two peculiar properties distinctly my own. These properties are indispensable to your success in your calling. Attempts have been made to usurp my supremacy as the king of filling materials but all have failed. I have my faults, glaring faults, if you please, but still you dare not disown me.

So the profession goes on using gold, cutting groves along the friable edges of incisors in order to find an attachment for gold. The end is accomplished; the glittering mass clings like a parasite to the sensitive surface, and the triumph of gold is complete, albeit the bordering enamel may crumble, lateral walls brake away bodily and cervical borders soften. The tooth may be thick, dense of structure, tough and devoid of sensibility; or it may be thin and translucent, imperfectly calcified, brittle, and exquisitely sensitive; it is all one, we will adhere to the maxim and fill it with gold. It may not be the best conceivable filling material, but it is the best thus far discovered.

Perhaps it would not be utterly idle and preposterous to consider what we would like to have in the way of an ideal filling material. You royalists who shudder at the thought of gold's being dethroned, calm your fears, for the fulfilment of the prophecy belongs perhaps to the distant future. The ideal filling material should be a plastic, it should of course be indestructible, a non-conductor, compatible in every respect, colour and appearance included, with tooth substance.

It should possess the valuable quality peculiar to some of the cements now used, of attaching itself to and supporting comparatively frail walls of enamel. It should be easily and quickly introduced, and should be susceptible of a fine polish.

In short it must combine the desired qualities of gold and all other filling materials now in use, and in addition to these a few other qualities which the inventor will be likely to call to mind. How almost invaluable would be a material which would firmly adhere to a smooth surface of dentine without the aid of grooves or undercuts. How much mischief by the way, has been done by cutting retaining grooves ; how many apparently strong walls of enamel have been undermined and checked ? To be sure, we who fill with gold, or tin, or amalgam, have no alternative but to groove, is we would not have our fillings drop out. But the ideal filling material, which is expected to adhere to a smooth, flat surface, will obviate all that.

What a dismantling of our dental cabinets will result when the new ideal filling material actually displaces gold for ever. Behold our fine sets of Varney's, and Butler's, and Chappell's, and Watling's pluggers forged over and made into excavators ! Behold the decline of the finishing-bur, the corundum-point, the porte-polisher, the finishing file, the polishing-strip, automatic, pneumatic, electric, and-so-forth-plugger, the file carrier, the polishing-buffs, Hindostan, Scotch, Arkansas and other wheels, the matrix, the burnisher, the foil-shears and crimpers, foil-carriers, the retaining-screw, the retaining-point drill, and finally, the stupendous yarn about the incredible consumption of gold by the \$30,000 a year operator who never, not even hardly ever, uses amalgam. Behold the decline in the consumption of coffer-dam rubber and silk ligatures, and in short, behold the changed visage of the Dental depot's clerk when the dentist orders another fifty cent package of cement and says never a word about being nearly out of gold, and felt-foil, and amalgam, and mercury, and Hill's stopping, and oxide of tin, etc.

In a decade or two our forceps will all have been remodelled into can-openers, and our elevators converted into tack-pullers, while the nitrous oxide gas artist will join a circus or turn veterinary surgeon. The dental engine, the spatula, the excavator, and the chisel only, will survive in all their pristine glory and vigour. No longer will the controversy wax hot in the dental convention over the merits of No.

60 as compared with No. 4 foil, or over the respective merits of grooves and retaining-pits. The exposed pulp will probably still come in for a share of attention, and pyorrhœa alveolaris will be met by a specific in the shape of an unrestricted opportunity to all the members to tal'k it to death.

What of the future? Fifty years hence another Barnum will scour the country for a man or woman with a Richmond crown. Five years hence—that is to say five years after the beginning of the looked-for New Era, dentists will charge a uniform price of one dollar per filling and they will fill ten teeth where they now fill one. Do not shrink so apprehensively from the inevitable, my dear professional brother. Your patrons are not going to forsake you to patronize some fifty cent. man across the way. Skill and judgment and care have been your capital in the past and so they will be in the coming future. If you keep your hands and face clean, and don't turn your collar too often, you may expect a larger patronage than you ever enjoyed in the past. Those who have given their years to the study of the teeth, their anatomy, their pathological conditions, their relations to other organs, have but little fear from an influx of new-comers into the profession, for dental education has already reached such a stage of development that the public have become informed and are able to discriminate between true attainments and mere pretence.

Seriously, we ask, is the forecast of the coming event as we have sketched it, quite improbable? Who shall say in this age of astounding invention, that a simple, durable, in every respect satisfactory substitute for gold foil filling will not readily be discovered? What if some one not in the profession should announce the discovery and should organise a joint stock company of shrewd business men to make known its genuine merit, could we, if we were so selfish and ungenerous as to wish it, prevent the revolution which the public would at once demand? Who believes such a thing as successful opposition would be possible?

Does the contemplation of the bare possibility of what we have suggested cause heart-burnings, and must we then confess that the abolition of gold foil would cause the carefully

constructed fabric, which we have been taught to believe was long ago firmly established on a corner stone of professionalism, to tumble into ruins? Perish a thought so unworthy! Perish the pride that couples the word professional with the worship of the golden calf! Where is all our profession of concern for the public's welfare? Has it vanished with the reflection that our elaborate measure for the prevention and relief of human suffering may yet be supplanted by other means far more simple and more easily applicable? Did time and space permit, it would be interesting to trace out at length the results, both as concerned the dentist and the public, of such a material being introduced. The thousands upon thousands, who at this day never resort to a dentist, would become his patrons. For it is not merely the expense of operations which deters many from the attempt to save their teeth. Fear is a powerful deterrent. If it were the case that we could dispense with the painful clamp, the nerve-rasping groove-cutter, the retaining-point drill, the disagreeable corundum-tape and the annoying rubber-dam, would not our operations be robbed of more than half their terrors? Who has not observed that the simple removal of the decay in a cavity may be accomplished with comparatively little pain in a majority of instances? It is the undercutting and drilling to secure a retaining shape that hurts most. What an impetus would be given to the cause of dental education by this revolution. The dentist would then find more occasion than ever to extend his sphere of practical usefulness by studying the diseases of the nose, throat, and other contiguous parts. Indeed this idea has already gained a foothold among some of the young members of our profession in this city, and the medical colleges have opened their doors to more than one D.D.S. within the past five years. It possible then that the destiny of the dentist, a few years hence, will be entirely changed. Is there any occasion for regret that this may happen, when it is more than probable that it would result in the opening to us of a broader and more liberal field? We think not. Be all this as it may, there is no questioning the fact that with the introduction of such a filling material as we have tried to describe, such an over-

turning and such an upheaval in the department of operative dentistry would occur as the wildest flight of imagination could hardly exaggerate. Will it come? If it comes we are prepared to show that gold foil is not the foundation stone of our professional pretensions?

When photography took its place among the arts, portrait painting declined. The artist remained an artist, but he underwent a metamorphosis. What will be our fate when the great improvement comes in?—*Ohio State Journal of Dental Science.*

DENTAL ECONOMICS.*

By Dr. J. H. PAINE, Middletown, O.

In the dental profession we may, appropriately, I think lay down the basis of our useful science, and name it dental economy; and there are several and diverse phases we will include all under the head: Dental Economics.

First, we claim for dentistry a conservative element. To destroy is easy,—requires no learning, no art nor science; but to save requires scientific knowledge, art in manipulation, and faith in evolution—that kind of evolution which, working jointly with the forces of nature, evokes a man, physically, intellectually, and morally. To illustrate: It is one of the economics of operative dentistry to reconstruct a diseased and carious set of natural teeth. Many of them are impaired by decay. One, two, three, and even five cavities are not unfrequently met with in an individual tooth. Whoever transforms the oral cavity from an unclean, discoloured, unhealthy, disgraceful pool of noxious disease-breeding, health-ruining, uninviting vortex, wherein revel bacteria and animalculæ, into a restored set of teeth, well plugged, cleaned of carbonate of lime, and rescued from gnawing, rankling bacteria and animalculæ, is an economist, *par excellence* to his race, and stands in the forefront among evolutionists, whether of the body, mind, or soul. We believe that well-filled, clean teeth, indicate intelligence. In every community he, she, or they are the best looking, most tasteful, and most godly who take the best care of their teeth.

* Read before the Mad River Valley Dental Society, Dayton, O., May, 19th, 1885.

Hence, we prove our first proposition that the capable dentist practices the noblest phase of dental economics, when he gives most attention to saving the natural teeth. Useful as artificial teeth are, they should always stand aside, or in the process of manufacture, should be at once laid on the laboratory table, when there is a waiting cavity in a natural tooth in the operating room. One of our best dentists never neglects a natural tooth that is known to be waiting for his art preservative for any other work, certainly not for plate work. The latter will do well enough when there is nothing better, nothing higher, nothing more ennobling. True dental economics has written all over its diploma, save ! save ! and, in parenthesis—only quacks needlessly destroy. But some man will say, there are so many filthy, non-appreciating, non-paying patrons, in every community, that the dentist cannot afford to bestow the care, skill, and persistency necessary to evolutionize this dental apparatus from filthiness, *per se*, to sweetness, *de facto*. Yet we may teach all nations, baptizing them with truthful teaching. Instruction is golden. Therein lies all the difference that pervades the immense distances between savage and cultured life, between a slum in Madagascar, and a professor in Harvard University.

We wish to rank, next to intelligence on the part of the dentist, in his own person and individuality, exact and scrupulous cleanliness. What if he be poor? water is free ; tooth brushes are cheap ; *creta preparata* is not costly ; perfection soap is attainable ; shoe blacking pays and tells that he is not only a dentist, but a gentleman as well. If he practice the preaching he orates to his patients, the preaching will do more good, and in fact will do the only good that is represented in practice.

We most solemnly adjure the younger brethren of the profession to abstain from every untidy, coarse form of amusement. Playing base ball, grooming horses, etc., are not elevating in ethics, nor helpful in dentistry. A brisk walk for exercise, a good book for company, and a patient in the operating chair should give the dentist more pleasure than anything else beside. It were well to have it lettered in gold

on the wall, where it will constantly inspire you, destroy not, save if possible, *SAVE!* But some man will say, how shall I save? We answer: save by removing the diseased part and the dead. There are many cases the dentist sees not until death has begun its work. Toothache is usually death of the pulp begun. Now it is not always necessary to remove the entire pulp to rescue from death the entire tooth. It is not always necessary for the general surgeon to remove the entire limb to save the body. Hence, as to topical applications, we reject arsenious acid. It is no longer used by the far-seeing dental surgeon. Be as cautious as he will, it will get where he does not want it to go, and even years afterward, if not earlier, will exhibit its "killing" work, in the translucent appearance of the dentine, the blue-edged colour line about the cervical wall, and the worse than all beside, condition of encystment of the periosteum in the alveolar process, and the inevitable break-down of its ossific structure; and irremediable extraction must follow ere peace comes to that house.

What the dentist wants in his practice in saving the natural teeth is not death, but life. Save the pulp if possible. If it dies, remove as much of it as you can, using great care to not thrust the instrument through the foramen and inoculate the alveolar process with the pus of the dead pulp, so that alveolar abscess be superinduced; and not only would we then have dead pulp of the tooth, dead periosteum, or parts about the apex, but presently dead tooth itself, and then mechanical dentistry is invoked, and Ichabod should be written on our wall; for we have filled the tooth and it is lost.—*Dental Register.*

Correspondence.

We do not hold ourselves responsible for the opinion of our Correspondents.

THERE ARE THOSE THAT ARE ENEMIES TO THEMSELVES.

To the Editor of the British Journal of Dental Science.

Sir,—It is far over six years since I wrote to the **BRITISH**

JOURNAL OF DENTAL SCIENCE. At that time I was opposed to the admission of the chemists on the Dentists' Register, and I have seen no reason to have my opinion upon that subject altered.

I do know that some chemists have acted honourably and given up the drug trade, while others have for the sake of filthy lucre united drug and dentistry together.

The uneducated people have come to the conclusion that a dealer in drugs understands the human mouth, a greater mistake might be made, although it is questionable.

At the time of the passing of the Dentists' Act, a worse—a far worse class of men—crept into the Profession. This class is known to-day as itinerant dentists. This class flourishes mostly about the smaller towns near Manchester, and particularly Bolton. These itinerant dentists move about from town to town. I have been informed that they go from door to door like any tinker with his soldering iron, seeking pots to mend. I have seen a vast amount of their work; it is rough, rude, unsystematic and unnatural as well as cold, stiff, and deathlike. The patients that employ these run-about dentists become more disfigured by the work than they were without it. To see a lady or a gentleman smile, then to behold white, shapeless, pot-like teeth, with a lump of vulcanite stuck under the lip, is enough to make one take up his pen in the hope of helping to stop a few of those non-metallic quacks.

Look at this strange anomaly, there are two sets of hawkers, one pays a licence and the other goes free. They are both hawkers, why not tax both?

I am, Sir,

Your obedient servant,
A DENTIST WITHOUT A DIPLOMA.

GLASGOW DENTAL HOSPITAL.

To the Editor of the British Journal of Dental Science.

Sir,—The Student's number of THE BRITISH JOURNAL OF DENTAL SCIENCE contains *two* notices of the above institution which, being contradictory, require a word of explanation. The hospital and school have been removed from Anderson

College to 56, George Square, so that the notice on page 857 is no longer applicable, and the advertisement on the fly leaf in front is correct. The new prospectus is in the hands of the printer, and will probably be ready in a day or two.—
Yours truly, J. R. BROWLIE, Dean.

56, George Square, Glasgow,
September 21st, 1885.

A CORRECTION,

To the Editor of the British Journal of Dental Science.

Sir,—May I draw your attention to a slight misstatement which, through a typographical error, was allowed to appear in my paper upon “Emergencies of Anæsthetising,” in your last issue. You make me say that the gag, unless well fixed between the teeth, is liable to *split*. Now, what I really wrote was that, unless the precaution above stated be taken, the gag is liable to *slip*. And I go on to describe how *slipping* of the gag may be obviated.—I am, sir, your obedient servant,
DUDLEY W. BUXTON.

Mortimer Street, Cavendish Square, W.

IMPROVED METHOD OF FILLING.

To the Editor of the British Journal of Dental Science.

Sir,—In filling teeth, especially front ones, I obtain great assistance by first making a matrix of compo—either stents or Entwistle’s—my plan is to soften it, press it against the teeth, and retain it long enough to set sufficiently, to remove it without bending, then cool it and cut away any composition which has entered the cavity of the tooth, it is then ready for use. Frequently by the exercise of a little thought and ingenuity, the matrix may be taken so that it will retain itself in the mouth, if not, making it fit tightly and elastically with a little rubber dam will generally be sufficient. By its use, soft fillings may be inserted with greater care and comfort to both patient and dental surgeon.—Yours truly,

H. B. MOSELY, L.D.S., I.

East Parade, Leeds.

THE EMPLOYMENT OF PALLADIUM AND AMALGAMS IN DENTISTRY.

In a letter upon the employment of amalgams which appeared in our issue of Sept. 1st, some important errors were, through the inadvertence of the reader, allowed to creep in. As these seriously prejudice the sense of the paper, we reproduce the gist of our correspondent's remarks.

Mr. Stringfield [not Springfield] suggests that it would be valuable to the profession if those who have had experience of Palladium should publish it. He adds :

"I observe that Mr. Tomes [improperly printed Jones] at the June meeting of the Odontological Society, in describing some few experiments with sundry amalgams, and in supporting certain methods of manipulating them to ensure the *sine qua non* water-tight fillings, states that in his comparisons "he had not used Palladium amalgam because he was already aware that he could make a water-tight filling with it."

MONTHLY REPORT OF CASES TREATED AT THE DENTAL HOSPITAL OF LONDON.

From AUG. 1st to AUG. 31st, 1885.

Extractions	Children under 14.	475
	Adults.	857
	Under Nitrous Oxide	250
Gold Stoppings		72
Other Stoppings		475
Advice and Scaling		143
Irregularities of the Teeth		52
Miscellaneous Cases		238
Total		2562

H. LLOYD WILLIAMS, Acting House Surgeon.

DENTAL HOSPITAL REPORTS. NATIONAL DENTAL HOSPITAL MONTHLY STATEMENT OF OPERATIONS FROM AUG. 1st. TO AUG. 31st.

Number of patients attended		1622
Extractions	Children under 14	483
	Adults	527
	Under Nitrous Oxide	545
Gold stoppings		101
Other Stoppings		588
Advice and Scaling		283
Irregularities of the Teeth		181
Miscellaneous		114
Total		2822

ISIDORE FREDERICK PRAGER, House Surgeon.

British Journal of Dental Science.

No. 426. LONDON, OCT. 15, 1885. VOL. XXVIII.

EMERGENCIES IN ANÆSTHETISING AND HOW TO MEET THEM.

IV.—ETHER.

By DUDLEY W. BUXTON, M.D., B.S., M.R.C.P.

Administrator of Anæsthetics at University College Hospital,
and at the Hospital for Women, Soho Square.

Ether tells mainly upon the air-passages, and so it will be best for me to dwell mainly upon the emergencies which are found in connection with them.

Ether is administered in such various ways that it would be impossible in the space at my disposal to do more than address myself to the most common accidents. When a cone or any modification of it, is employed—and all are, I think, bad in theory and most unpleasant in practice—the patient experiences a number of most trying phenomena, which give the impression that he or she is being garotted. The ether vapour is very pungent and irritating, and as soon as its full rush is felt upon the delicate mucous membrane lining the larynx, it excites “a reflex spasm.” In common phraseology, the patient catches his breath and cannot breath. This spasm may be momentary, and so of no importance; but sometimes it lasts longer, and the patient remains breathless and not breathing for a moment or so. The face grows livid, the ears and lips are blue, and the nails of the hands become dark and purple. This is a condition of danger, although happily one which can, in by far the majority of cases, be easily and speedily remedied. The way to treat it is, first, to remove

the cone or inhaler, then to draw the head back, and support the hyoid bone and chin with one hand, while with the other, firm pressure is made upon the thoracic parietes. Once, twice, or thrice, and then comes a gasp, a sigh, and the rhythm of respiration is started, and goes on quietly enough as if nothing had happened. It is unnecessary to make a fuss about the matter, take it with composure, and never be flurried. More persons are flurried to death than are anæsthetised out of life. When two or three good full inspirations have been made the inhalation may be resumed. It will be as well not to repeat the experiment of giving too concentrated a vapour, lest your patient becomes asphyxiated again. For the comfort of the administrator, be it said, that as a rule the laryngeal mucous membrane soon accommodates itself to the irritation. There have been cases in which death during the administration of ether has occurred, apparently by spasm of the glottis. Were such an event imminent, one would know by the fact that pressure upon the thorax would fail to force air out of the lungs, and this, of course, is evidenced by no breath escaping the nostrils or mouth. A vesia, lighted and held in front of the mouth, is a ready test, and one which must have suggested itself to all minds since vestas were first invented. Only one course would be open in this case, and that to incise the windpipe below the larynx—in short, to perform tracheotomy. Rare as such an emergency happily is, yet it is one which has occurred, and so may at any moment happen again.

In etherising patients, I find one of the most troublesome contingences arises through nervousness. The patient, often a woman, not always,—for some of the most timid and troublesome cases are those of great, strapping fellows, who should know better,—holds her or his breath as long as possible, and then being partly cyanosed, a full breathe is at last taken. This consisting of a highly concentrated ether atmosphere, the lungs having been pretty well emptied of oxygen, sets up coughing and laryngeal spasm. So severe may be the cough, that the patient will struggle vainly and fight for breath. In most instances the best plan to adopt is to allow a breath or two of fresh air, or

if you are employing an inhaler, which can have the mixture of ether and air graduated, it is best in that case to dilute the ether. The laryngeal mucous membrane will soon accommodate itself to the circumstances. When the trouble is purely psychical, I am sure the kindest and wisest thing to do is to crowd on the ether and get past the stage of consciousness.

Hysterical women often grow very excited under the influence of ether, and wax violent ; but no danger, as a rule, attends outbursts of an hysterical character, and if the ether be rapidly pushed, these patients take it as well as others. They and others who are simply nervous often resist taking full and deep inspirations, and content themselves with the shallowest of shallow breaths, which are wholly inadequate to promote rapid anæsthetisation. To expedite matters it is well to keep one hand placed upon the chest, and gently follow the movements of respiration, pressing on the thorax when it sinks, raising the hand when it rises. It is well to remember that the more rapid you are in effecting unconsciousness in the use of ether, the better is it for your patient.

While upon the subject of coughing, it may be as well to mention that some persons are peculiarly susceptible to ether, and show a tendency to cough, not only at the first, when the inhalation is being commenced, but when the operation is being performed, and you have—rightly enough—diluted your ether atmosphere. In many operations such coughing is highly inconvenient, is detrimental and even dangerous. To obviate this troublesome coughing, it is best to increase the strength of vapour used, as although possibly the first effect will be to increase the cough, yet, as soon as profound narcosis has been gained, the coughing will cease. This manœuvre must be accomplished carefully, or troublesome difficulty of breathing may ensue.

Ether vapour, however, effects not only the mucous membrane of the larynx, it also travels more deeply, and impinging upon the delicate lining of the bronchi and air cells of the lungs gives rise to increased bronchial discharge and bronchitis.

In administering ether to patients who have to be placed upon their side or chest through the exigency of the operation, careful heed must be taken of the respiration. The breathing is in such cases sometimes liable to grow more and more shallow and even to cease altogether. The weight upon the patient's chest walls is greater than the feeble efforts at respiration can overcome, and so he ceases to breathe. The victim of this accident is in precisely the same predicament as a person in a crowd, who becomes jammed so tightly that his chest walls can't perform the movements necessary to the accomplishment of respiration. Happily it is easy to restore the rhythm of respiration. Raising the uppermost arm or rolling the patient on to his back in most cases is enough, but if no spontaneous attempt at breathing take place, a few attempts at artificial respiration will restore animation.

A further danger is, that if ether be administered in full quantities for some time, the blood becomes surcharged with the vapour, and as a result the respiratory centre in the medulla oblongata become paralysed. This poisoning of the nervous centres which preside over respiration and initiate the muscular movements concerned in respiration, is a grave complication, and unless speedy steps are taken to meet the danger, the patient must inevitably die from asphyxiation. If care be taken this emergency would never arise, but in the hands of administrators of small experience it is very apt to occur. Under existing circumstances so few men receive any systematic instruction in the administration of ether, that small blame can be attached to those whose ineptness gives rise to untoward accidents in etherisation. The patients who are thus overdosed with ether become cyanosed, or perhaps a better description is, 'ashen.' Their eyes glisten in a ghastly way, and stand out from an ashen face. The respirations grow more shallow until they can no longer be detected. The heart in these cases always beats for some time after respiration has ceased, and in that fact rests the patient's salvation. But the pulse perceptibly weakens until when breathing has stopped it can hardly be felt in the smaller arteries, and though perceptible in the carotids it is yet small and very feeble. As soon as these signs are observed, and

again let me say the observant eye ought to detect the oncoming of danger long before these signs have made themselves manifest, the ether inhaler should be removed, and artificial respiration should be commenced and persevered in until the ether is well cleared out of the lungs, and the depurated blood again calls upon the nervous centres to carry on their normal function.

Syncope occurs in the course of ether narcosis. It is a far less frequent accident than when chloroform is the agent employed, but since it does occur, we must be prepared for its possible advent in order that we may not lose time when the event happens, but straightway have our restorative measures ready for prompt application. In persons with very weak hearts, and in those who are the subjects of excessive fear, syncope is most likely to happen. Most authorities at the present time admit that ether syncope is probably of reflex origin. The pungency of the ether vapour impinging upon the endings of the laryngeal nerves and possibly those of the fifth pair as well, produce so powerful an impression that the heart's inhibitory centres in the central nervous system are called into play and as a result the heart is stopped. The nerves which actually convey the stopping impulse are of course, the vagi; so that in cases in which syncope is apprehended it is advisable to administer a dose of atropine, say $\frac{1}{120}$ of a grain, a quarter of an hour before the ether is given. This lessens, if it does not abrogate the inhibitory action of the vagus nerve over the heart and so helps to shield our patient from danger.

Many emergencies of the nature of syncope have been noticed in the course of these places so it is not necessary to repeat here the directions for treatment which have been already given.

When ether is administered in cases in which breathing is impaired, in empyema, (pus in the chest cavity), in phthisis, when one or both lungs are crippled, and the air breathing space is much decreased, and many other similar conditions, emergencies are likely to occur. These are mostly of the nature of asphyxiation, and their treatment would be conducted on lines quite similar to those indicated above in

dealing with the overdosage-with-ether asphyxiation. This is, of course, speaking generally; in practice every case will need a slight variation in treatment, will require being dealt with upon its own merits.

In empyema or in tapping for ascites or pleuritic effusion, the sudden relief of pressure which the heart experiences when the fluid is withdrawn may induce syncope, again this precaution is needed. The head must be kept low and the body maintained in one position, while the pulse and respiration are carefully watched.

We have now rapidly passed in review some few of the many emergencies which the practical anæsthetic is called upon to meet, it is hardly necessary again to insist upon the terrible importance to every one undertaking to employ ether, nitrous oxide gas, or chloroform, to thoroughly understand the nature of the agent he is using and to appreciate the responsibility he incurs. As cases of difficulty recur, they should be carefully noted and the lessons they teach stored away in the mind, for the more emergencies the anæsthetist has met with, provided they be not of his own making and through his carelessness, and has successfully met, the better anæsthetist will he be and the safer will his patients be when under his hands.

PAUL BERT'S EXPERIMENTS FOR THE PRODUCTION OF ORDINARY ANÆSTHESIA THROUGH THE INHALATION OF NITROUS OXIDE WITH OXYGEN UNDER HEIGHTENED PRESSURE.

BY DR. HOLSTEIN.

Translated from the German article in the *Centralblatt für Zahnheilkunde*, for the *British Journal of Dental Science*.

It is well known that when Nitrous Oxide is inhaled it will produce, during the most painful operations, absolute anæsthesia. But it is also known that this anæsthesia cannot be continued for as long a time as most surgical operations demand, for directly a sufficient anæsthesia is produced symptoms of asphyxia appear which would speedily cause

death if the inhalation of nitrous oxide was not immediately discontinued. In order to surmount this serious difficulty, Paul Bert has now undertaken a course of experiments, in which he has employed nitrous oxide and oxygen mixed with other gases. By the use of this mixture he has succeeded tolerably well in avoiding asphyxia, but the anæsthesia being defective produced a condition of agitation which made the operation impossible. In consequence, one could not do otherwise than use the pure nitrous oxide and relinquish a longer narcosis or introduce another principle into the method pursued. Subsequently the idea occurred to Paul Bert to investigate whether it would not be possible while retaining a perfect anæsthesia, to prevent asphyxia, by the inhalation of a mixture of nitrous oxide with oxygen under a higher than ordinary atmospheric pressure. It is easily comprehended how Paul Bert lighted on these ideas if one remembers the laws relating to the absorption of gases in fluids.

The volume of a gas absorbed by a fluid is always the same, whatever the outer pressure may be under which the fluid gas is found. As according to Mariotte's law the density of a gas is retained exactly according to the outer pressure, it follows in this case that the weight of the absorbed gases is retained exactly according to the outer pressure under which the gas stands. In a mixture of several gases one gas exercises no pressure on the other. Only so much would be absorbed of each gas as would be absorbed if that gas alone were present. The pressure which that gas exercises on itself is called the partial pressure of the gas indicated, for a given case. The sum of the several partial pressures is naturally the same as the accumulated pressure which is exercised by the mixture.

If, then, one takes a mixture of one volumes of oxygen with five volumes of nitrous oxide* so if the whole mixture is placed under the ordinary atmospheric pressure, the partial pressure of the nitrous oxide will amount to $\frac{5}{6}$ of the atmospheric pressure. If this mixture is inhaled the blood

* Such a mixture contains quite sufficient oxygen to avoid any danger of asphyxia.

will receive only $\frac{5}{6}$ of the quantity of nitrous oxide, which by an inhalation of pure unmixed nitrous oxide would be set free. That the blood may receive the quantity necessary for the attainment of anæsthesia one must raise the pressure $\frac{1}{5}$.

The correctness of this theoretical reasoning was proved beyond doubt, first through experiments on animals and then through observations on men. Animals caused to inhale a mixture of $\frac{5}{6}$ nitrous oxide and $\frac{1}{6}$ oxygen at an atmospheric pressure of $\frac{1}{5}$, fall quickly into a deep Anæsthesia, which could be very much prolonged, without calling forth any symptoms of asphyxia. The blood retains its normal colour, the heart beats with its accustomed strength at the normal rate, above all the so-called regulative functions remain intact, on the other hand, the animal functions, consciousness, sensibility, and motion are absolutely suspended.

If, after the desired length of time, the bag with the mixture of gas is removed, it will be observed that after the third or fourth inspiration of pure air the animal will be suddenly restored to sensibility, the power of volition, and to the use of its intellectual functions. This unusually quick restoration to the normal condition, which forms so strong a contrast to the application of chloroform, shows that the nitrous oxide forms no chemical union in the organism (the contrary is the case with chloroform) but is simply set free in the blood. As soon as there is no longer any nitrous oxide contained in the inhaled air, that absorbed by the blood quickly disappears through the lungs, as Paul Bert's analyses of the blood gases have shown.

Now the question is, whether the results obtained by the new methods upon animals would be the same upon men, and whether the complicated apparatus for the application of nitrous oxide, under heightened pressure, could be made to meet the needs of surgical practice. The publication of the first clinical experiments was anxiously waited for. It soon appeared, and was a perfect success.

On the 13th February, 1879, the famous Parisian surgeon, Léon Labbé, operated on a young girl afflicted with ingrowing toe-nail. The patient (a very timid and nervous person),

M. Labbé, his assistants, and Paul Bert stepped into the great pneumatic room of the establishment of Dr. Duplay, where, in a few minutes, the air pressure was raised to O^m 17 quicksilver (a total pressure of O^m 92); the patient was laid on a mattress and a mask was applied to her mouth and nose like that used in the inhalation of pure nitrous oxide. But, in this case, the bag with which the mask communicated contained a mixture of 85 parts of nitrous oxide and 15 parts of oxygen. "I held," writes Paul Bert, "the arm of the patient, whose pulse was tolerably quick, as suddenly, 10-15 seconds after the first inspiration of the anæsthetic gas, without the slightest change in the pulse, breathing, colour of the skin, and expression of countenance, and without the slightest sign of numbness or of any emotion, the arm became perfectly limp. The anæsthesia was complete.

The operation which followed the arrangement of the bandages was commenced, and during this the patient made not the slightest movement; she slept quite peacefully and showed a normal pulse. After the lapse of four minutes, when M. Labbé had arranged the bandages, slight contractions manifested themselves, first in one arm and then in the leg.

As soon as the operation was over and the bandages removed, the inhalation mask was taken off, and the contractions immediately disappeared. The girl slept half a minute longer, then awoke as one of those present slapped her on the shoulder, looked at us with astonishment, sat up and began suddenly to cry and complain of a pain in her foot. She was then asked how she felt, and answered, she felt very well and would like something to eat, for through fear of the operation she had eaten nothing since morning. She declared, during the operation she had neither felt nor dreamed anything. At the first inhalation of the gas she experienced a very pleasant sensation: it appeared to her that she was ascending into the sky which was blue and starry. She arose, went without help to the carriage which was to take her back to the hospital, and complained so much of hunger on the way that they were obliged to stop and get her something to eat. No disagreeable consequences were observed."

This first observation was very instructive, but on account of the short duration of the anæsthesia, and the insignificance of the operation, could not be considered as a sufficient proof of the excellence of the method, and it was first in consequence of the bold initiative of a prominent surgeon, Professor Péan, that anæsthesia with nitrous oxide and oxygen, under heightened pressure, owed its introduction into general clinical practice. In order better to show the working of this method we will instance a case in which Péan, by means of prolonged anæsthesia, was enabled to perform a major operation.

The patient was a woman, about forty years of age, with a carcinoma mammæ. The operation was performed by Péan and his assistants in a pneumatic chamber, under a pressure of 17 to 19 c. quicksilver. In a great caoutchouc bag and several air bags were contained 200 litres of a mixture of nitrous oxide and oxygen in proportion to 85, 2; 14, 8. The compression of air began at fifty-eight minutes past twelve, the inhalation at nine minutes past one, when the pressure was almost exactly 18 c. The patient showed no signs of excitement, was motionless, and in a state of perfect muscular resolution, as at ten minutes and fifteen seconds past one Péan made the double elliptical incision in the tumour. Perfect anæsthesia. At twelve minutes past one the mamma was extirpated. The application of the hæmostatic forceps lasted two minutes. At fourteen minutes past one, one exhausted air-bag was replaced by another, when the patient breathed for an instant in pure air; at this moment the legs moved slightly. At one fifteen, the patient partially awoke, spoke a few words, felt for the wound, and appeared to feel some pain. The momentarily broken inhalation was continued. Perfect stillness during the union of the edges of the wound. At 20 minutes past one the bag containing the nitrous oxide was taken away. The bandaging took place under heightened pressure.

Of 200 litre of gas only 50 remained; the patient, during the whole operation, had breathed 150 litre in fourteen minutes. At 22 minutes 55 seconds past one, as everything was completed, the patient awoke. At 25 minutes past one she rose from the couch and declared she had felt nothing.

Before the operation the pulse was 60. At the beginning of the inhalation it rose to 104 ; during the perfect anæsthesia it was again 60. At the first awakening it went up to 92, and as soon as the anæsthesia again deepened fell to 68. At the final awakening it counted 84, and ten minutes after leaving the operating chamber it was 76.

We see that in this case the anæsthesia was continued for fifteen minutes without calling forth any serious symptoms of asphyxia ; the complete insensibility was produced in less than one minute without any period of excitement, and the return of consciousness instantaneously took place ; the patient had neither pain, appearance of suffocation, sickness, nor other distressing symptoms consequent upon the use of chloroform and æther.

Since then Professor Péan has carried out a tolerably large number of important operations by means of anæsthesia after Paul Bert's method with the best results (16 cases are mentioned in a table in Rottenstein's book, 1880). The age of the patients were from 13 to 58 years ; anæsthesia was produced in from 15 to 30 seconds to 1-2 minutes, and the duration according to the needs of the operation, 26 minutes. As concerns the above-mentioned operations, some were very difficult. In all these cases the complete anæsthesia was produced without previous symptoms of excitement, and the normal consciousness returned in from half a minute to one minute after the cessation of inhalation. In general one may say that nitrous oxide after the method of Paul Bert—that is to say, under a heightened pressure—ranks higher than chloroform and æther for the following important reasons :—

1. Through the complete absence of a period of excitement at the beginning of the anæsthesia.
2. Through the tranquility of mind which the operator enjoys as he can feel assured that the anæsthesia will remain perfect during the whole operation.
3. On account of the speedy restoration to normal consciousness even after a prolonged anæsthesia.
4. Through the absence of sickness and other distressing effects.

5. Lastly; the most important reason of all, through the absolute safety and harmlessness of the method. It must be remarked that in the beginning, when we were not quite confident of Paul Bert's method, cases tolerably often came forward, when during the anæsthesia contractions in the extremities were observed. This complication at first troubled the surgeons, and appeared to them to be a blemish; but it soon appeared that such contractions were the consequence of the influence of nitrous oxide under insufficient pressure. To get rid of them it was sufficient—as Paul Bert showed—to raise the pressure in the operating-room from two to three centimeters, which can very easily be done.

In the observations of Péan the pressure wavered between 15 and 22 c.c. In some, but very rare cases, the pressure had to be increased to 26 c.c. to produce perfect anæsthesia. The extraordinary facility with which one can increase the pressure, and with it the anæsthesia, is also one great excellence of the method.

HEREDITY AND DEVELOPMENT OF THE TEETH.

By ALTON HOWARD THOMPSON, D.D.S., Topeka, Kansas.

There is a growing conviction amongst the scientific members of the profession that the forces controlling development of the teeth, and especially the causes of defective tissual formation, must be looked for further back than the life history of the individual; that in the pre-natal influences will yet be discovered those forces dictating the variations in dental formation which are so interesting, but too often most disastrous in their effects upon the arrangement and quality of the teeth; in short, that, like other organs and tissues, the physical peculiarities and characteristics of the teeth are under the irresistible control of the omnipresent dictations, hereditary influences, be they immediate or remote. They are descended from the teeth of the ancestors of the individual in regular generations, in obedience to the law that "like produces like." Mere existence is inherited, and to be formed

* Read before the Missouri State Dental Association, at Sweet Springs, Mo., July 8, 1885, and reported in the *Dental Cosmos*.

at all is to be formed like the being from whom organisms are descended and after whom they are copied. In view of this fact, the laws of heredity have an absorbing interest to us, and demand our study and investigation.

Briefly, then, heredity in general is that law by which every organized living being, plant, or animal is developed in the likeness—is the counterpart, more or less exact—of the parent forms which produced it. Its external form and features, its internal organs and tissues, are copied after the type of the species to which it belongs; all its distinguishing peculiarities being characteristic of that species. There is a law of type which governs the evolution of every molecule, the placing of that molecule in the building of tissues, the arrangement of those tissues in the growth and position of organs in the structure of the individual so that it shall be a typical representative organization. That law is heredity. But the force in its entirety is not so simple as this easy definition. Within the limits of typical requirement there is such a range of variation that no two examples of any species are precisely alike. The activity of this variation brings before us such innumerable differences in the quality or quantity of structure, of external form and feature, of internal organ and tissue, that the complexity is bewildering. The labyrinths of the possibilities of variation can never be unraveled by finite man. Their classification would demand superhuman grasp, so that, with all the illumination the best intellects of the age have been able to throw upon the subject,—from Cuvier and Laplace to Darwin and Huxley and Haeckel, and the host of minor workers who are less known because occupied in special fields,—there still remains a mass of darkness that seems unfathomable. And of the great mass of learning already accumulated upon the subject, there are few men who can master the details of the knowledge we already have of heredity and variation in all its complexity.

Mr. Charles Darwin is an authority upon the natural history of inheritance, and in his various works describes it at length. Without detailing, we must here acknowledge our indebtedness for the substance of many of the generalizations which we will submit, and for some of the special rules given.

Man is the epitome of the experience of his ancestors. His every organ is made in that form which was most useful to them in the struggle for existence, and these, being adapted to the preservation and perpetuation of the species in his environments, he transmits to posterity ; but he does not transmit the form and substance of tissues and organs unimpaired to his successors, but varies them in relation to his own experiences and the demands for readaptation to new surroundings. The individual experience of our species, as of other organized beings, is constantly exerting a pressure in one or another direction upon every organ, as it is used or disused, —beneficial or cumbersome and superfluous,—which tends to its modification. Variations are readily created and are as readily transmitted, thus exhibiting the flexibility of organisms. Variations generally arise for the benefit of the species, but even if injurious are as liable to be passed onwards. Variations occur for readaptation to changing environments, and, as these are ever altering, change is ever present, and an organ is never transmitted in precisely the same form and structure in which it was received. In civilized man the evolution of the species is now under the domination of that artificial life, that retirement from nature, in which he has incased himself. So the variations at present in progress in his organization may be considered unnatural, if not detrimental, and injurious to physical perfection and natural integrity of organization. This is especially noticeable in the tendency to transmit imperfection and disease, as is so frequently noticed, amongst civilized people.

Dr. Lincoln Ray says that “two great powers or laws of nature co-operate in the perpetuation of a species. One of these laws produces difference, diversity, individuality, by which no two beings are precisely alike. The other great law produces similarity, likeness, uniformity, and it has two kingdoms or fields of action,—first, the species, in which it is supreme and only ruler ; second, the individual, in whom it shares its sovereignty with the first-named law. The first is the law of diversity, the second the law of uniformity or heritage. The law of hereditary transmission is identical with the great law which preserves the immutability of species.

The difference is in the scope, not in the nature, of the law. In its first field of action it transmits inevitably specific traits ; in the second it transmits, not inevitably, individual traits." He concludes, "first, that from healthy and non-consanguineous ancestors proceed a posterity of which a very large proportion are born perfect, sound, and with tendencies toward healthy procreation ; second, from unhealthy or consanguineous parents proceeds a posterity of which a very much less proportion are born perfect, etc. Or, to make the correlative statement,—healthy and unrelated ancestors produce a posterity of which a very small proportion are imperfect or unsound ; while unhealthy or related ancestors produce a posterity of whom a much larger percentage are imperfect or diseased."

Speaking of the persistence of race as one of the wonders of heredity, M. Topinard, in his "Anthropology," says, "From inheritance emanates the law of permanence of types. In the pure race all the individuals resemble each other as regards their main features. The law of inheritance is that the son is the exact reproduction of his father and mother, but there is also a conflict of all the other elements which figure in his genealogy. In every individual, as in every generation, there are two opposite tendencies,—the one to divergence or variability of characters ; the other to concentration or perpetuation of characters. The force presiding over the latter is inheritance, the property of living beings to reproduce themselves under the same forms and with the same attributes." But individual experience causes variation, as apposed to racial experience, which causes permanence. "There is a struggle between the characters ; some are added, others neutralize each other, others are reciprocal and mutually assistant, others totally destroy and abort apposing characters. The most remote ancestors have their share in forming the individual as well as the immediate parents. In atavism the reappearance of characters is a matter of chance, or rather there are in the germ latent powers which are awakened into activity by favorable influences. The principal forms of inheritance are (a) *continuous* inheritance, when the son resembles both parents, and

these their parents ; (b) *interrupted* inheritance, when, without resembling either father or mother, he is like a grandparent,—this being very noticeable in the transmission of disease, it frequently appearing in alternate generations ; (c) *collateral* inheritance, when a child resembles an uncle or grand-uncle or aunt ; (d) *atavic* inheritance, when the resemblance goes further back to more remote ancestors, its appearance in succeeding generations being erratic. Some children are exactly like the father, others like the mother, others again like other ancestors or relatives. * * * Examples of interrupted, collateral, and atavic inheritance are numerous among mixed races, the characters which mongrels exhibit being notable examples of the law. Thus, a mongrel of the first blood may be exactly intermediate between the two parents, or may have a predominance of the peculiarities of one race in some of the features and of the other in others. As further mixture goes on, some racial characters are apt to be retained to remote generations. * * * Two pure races will have a better progeny than two impure races. Where one is pure and the other impure, there will be a progeny intermediate in purity."

One feature of the laws of inheritance does not seem to have received the attention which its importance demands, and that is the action of *sexual alternation* in the transmission of natural or abnormal peculiarities,—that is, that the child usually reproduces the physical peculiarities, temperament, size, structure, disease tendencies, etc., of the parent of the opposite sex. Thus, the sons are likely to resemble the mother, and the daughters the father, in physical form and character. Or, if they do not resemble the immediate parent, the resemblance will be traceable through them to *that* parent's parent of the opposite sex. Thus, if the son do not resemble his mother, he will be found to be like *her* father, or *his* mother. It is interesting to trace these resemblances in regard to the teeth, and find with what exactness the law is carried out. The rule is not invariable, of course,—no rules are so,—but there is sufficient stability in its action to elevate it to the dignity of a law and to proceed upon the assumption of alternate sexual inheritance in generalizations. *Atavism*,

which is so imperfectly understood, may be but the persistent effect of the workings of this law down through remote generations, when features appear which have been totally forgotten in a family. Thus, a child will appear in a family with red or other colored hair which is entirely different from all the rest of the members, and no one remembers when an ancestor had such a feature. Or, a peculiarity will crop out which is a distinct characteristic of a race totally foreign to that of the family, the time of such crossing having been so remote as to evade the possibilities of investigation. Thus it is that features are consequently reappearing in an apparently erratic manner, without regard to traceable inheritance ; but if the history of the family could be accurately traced, there would always be found an ancestry to explain unusual characters. Mr. Wm. Sedgwick has given us some observations upon the influence of sex in hereditary disease, in which he says, "Sexual limitations, although met with in all forms of hereditary disease, is more constant and more strongly defined in those diseases affecting hereditarily the skin and its appendages than in those affecting the other organs or tissues of the body. And this should not be surprising when we consider that sex modifies the structures in man as in the lower animals,—thus, the absence of the beard in woman, the variation of the plumage in birds, the weapons of combat possessed by the male in many animals, and their absence in the female, etc. In abnormal excess or deficiency of hair abnormal development of the teeth often also appears, some of these cases occurring according to the laws of atavism. These are often limited to one sex, or appear in alternate sexes."

But let us now apply these laws to the study of the development of the teeth. We find that, being dermal organs, they are peculiarly susceptible to the influences of heredity, and also to causes of variation. Not only is the type of tooth usually determined by the impress of one or another of the parents, but its peculiar defects are the result of the parental impressions, of unfortunate temperamental, consanguineous, or diseased combinations. Of course the immediate influences are not all that is to be considered in the structure of

the teeth, but, regarding their deficient formation, these are usually paramount to all the influences of remote inheritance. Special defects are usually traceable to recent inheritance.

Carpenter says : "The influence of parents upon offspring is strikingly manifested not merely in the mixture of their characters, normally displayed, but by the tendency to hereditary transmission of perverted modes of nutrition and functional activity which may have been habitual to either. Many diseases are accounted as hereditary, and perhaps others may be added to the list. The predisposition may have been congenital on the part of the parents or acquired by themselves. The intensification which almost any kind of perversion of nutrition derives from being common to both parents is most remarkably evinced by the lamentable results which too often accrue from the marriage of individuals nearly related to each other and partaking of the same 'taint.' Aside from taint, even a strong idiosyncrasy is frequently present, which, by being intensified, may give rise to unfortunate mental or physical defects." But consanguinity, pernicious and powerful as it is for evil, by multiplying family weaknesses or diseases in offspring, is not the only causes of the augmentation of deleterious predispositions. Persons not related by blood may be possessed of "taints" or idiosyncrasies or defects of organs or tissues so similar that, by combination in offspring, they will lead to excessive exaggeration. In regard to the teeth, this will have an especial effect, owing to their peculiar susceptibility.

But let us here notice what Dr. Norman W. Kingsley says upon this subject. He writes that "many of the forms of irregularity with which we are familiar are directly traceable to inheritance and transmitted peculiarities. Especially is this true when it is confined to one or two teeth,—the primary cause, so far as that individual is concerned, is an hereditary family peculiarity. The teeth of every person possess more or less individuality, and most of those features which stamp their individuality are hereditary. The form and color of the teeth, when not disturbed by abnormal influences, are derived from the same source. Any departure from typical form is a peculiarity of descent, as well as any

predisposition to defect or deformity. It is a most wonderful subject for contemplation that at some remote period in the history of our progenitors, when nature departed from the normal type to produce, say, a deformed lateral incisor, a twisted cuspid, or to suppress a lateral or a third molar,—that, following down the line of descent, we find precisely the same peculiarity appearing and reappearing in the same line, and again not in the line, but in different branches of the family.” Defects of structure, as well as of form and arrangement, are also transmitted more or less directly. Thus, we know that children frequently have the same defects upon the same teeth which the parent possessed, and that they become carious, and are lost at the same age ; or, owing to the increased ratio of deficiency of structure by inheritance, are lost earlier in the child. A minute defect of contour, fissures, extra cusps on lingual or palatal surfaces, peg-like teeth, total absence of particular teeth, dark or soft areas in the enamel,—all these and more are often transmitted as family peculiarities.

But the peculiarities of form or defects of the teeth are transmitted with exact regard to the laws of heredity and variation. Thus, a child's teeth will likely most resemble the teeth of the parent of the opposite sex, or that parent's ancestors, with their peculiar forms or defects. Or, again, its teeth will bear the marks of atavism and resemble a remote ancestor. This will sometimes account for the appearance of a good denture in a family whose individuals have very defective teeth, or *vice versa*. Sometimes there is a blending of the types of two or more ancestors, the front teeth presenting the good organization of one parent, and the molars the bad structure or diseased organization of another. But this is not so usual as for the entire denture to partake of the structural integrity of the dominant hereditary influence. When this is diseased, as when syphilitic, phthisical, gouty, strumous, etc., the teeth are prone to partake of the taint, subject of course to the occurrences of exacerbation and latent periods of the disease during formation. Through their susceptibility the teeth are unfortunately recipients of a legacy of disease in most of its varied forms ; and it does not

seem that in them it tends to lessen by the natural powers of elimination which most tissues possess ; so that in time hereditary disease will exhaust itself and run out. But with the teeth the opposite rule obtains, that the tendency is toward augmentation by transmission, and the disease exhausts itself only when the organs are destroyed. Natural elimination occurs in the individual, of course, but while the disease is in the system the teeth have no power of resistance to its interference with structural integrity.

But the suppressive effects of disuse, as affecting development of the teeth through heredity and variation, are also to be noticed. In no class of organs are the inherited effects of the influence of changed conditions so marked as in the teeth of man. Being thus susceptible to the effects of active employment or of neglect, they have, by the protracted operation of disuse weighing upon them and retarding their production for generations, become, as one of its effects, so defective and incomplete as to approach the condition of rudimentary organs. The active employment of an organ makes demands upon the nutritive powers for its growth and strength, which is responded to by increased nutrition and added strength by those powers, and use gives an impetus to transmission which causes that organ to be well and strongly developed in the next generation. But disuse furnishes no stimulus to either nutrition or transmission, and the organ so affected is produced as a tradition due to the stimulus of past generations, when it was in active employment ; but, owing to its disuse in recent generations, it is weak and ill-formed ; it has not the necessary stimulus either for development or strength. Not only that, but an organ that has fallen into disuse and neglect becomes deleterious and injurious, and is, by a natural process of economy of growth, deprived of nutrition, that it may be suppressed and aborted. The remains of many such organs linger in the organization of man as rudiments of former organs which served a useful purpose under different modes of life ; but the conditions of life being changed by new environments, these organs became useless, then injurious, and were gradually suppressed by the law of economy of growth.

Such organs the teeth in man are rapidly becoming. Indeed the wisdom teeth have already arrived at that stage in their career of suppression when they are little more than rudiments. They are never well organized, are often rudimentary in form, and often totally absent, either through failure to erupt or develop. The wisdom tooth in the race is departing, and we are the contemporary witnesses of the act of its abolition as a useless organ. Will the second molar follow it in time, and then the other teeth in more or less regular succession? We do not know. We only speak of what we observe. But we do know that all the teeth are defected in form and deficient in structure in most of the individuals of the luxurious races of man; that they require the constant care of a skilful and costly corps of professional men to preserve them at all, and that the diseases which are causing their destruction from result the effects, more or less direct, of defectiveness of organization due to disuse. But this branch of the subject is too vast to enter upon at this time.

The effects of disuse are rated as one of many pernicious influences which cause defective formation through inheritance. When so much dental infectiveness prevails it becomes us to estimate all forces likely to contribute to it, and the greatest of these we believe to be the malign power that, through heredity, presides over formation. If heredity is strong for normal structure; if physiological perfection is exactness of detail in the copying of the type, then, indeed, must heredity be strong in its influences where there is present any evil power which detracts from or interferes with normal development. If it transmits evil as readily as good,—and there is no question of this,—then must we charge it with the responsibility of being the medium through which much dental defectiveness is brought down to us. If it would transmit only the good, disease would soon be eliminated in the species, but unfortunately health, unlike some diseases, is not always transmitted and is never contagious.—*Dental Cosmos*.

SUBMAXILLARY ADENO-CELLULITIS SUB-PERIOSTIAL ABSCESS OF THE JAW.

A CLINICAL LECTURE.

By M. VERNEUIL, of the Hospital de la Pitié, Paris.

M. Verneuil said: "I intend to speak to you to-day about two affections, the differential diagnosis of which is at first rather difficult. I mean submaxillary adeno-cellulitis and sub-periostial abscess of the jaw.

The physical signs common to both these affections are, a diffuse swelling, having lasted two or three days, and caused by some acute illness, redness, heat and pain, half closure of the jaws, and the peculiar attitude of the patient, which somewhat resembles that in torticollis. The functional symptoms are—difficulty in swallowing, shiverings, fever, general malaise, and loss of appetite.

The exciting causes are usually a chill, the effects of which extend to the tonsils and pharynx, phlegmonous tonsillitis, or some form of angina. Those proceeding from the lower jaw, are old periostitis which have been started afresh by the action of cold, dental caries, the stopping or unstopping of a tooth, the eruption of a wisdom tooth, &c. To sum up, there are two special varieties—an amygdalo-pharyngitis, or some form of osteitis of the maxilla.

The Subperiostial Abscess is a tumour which extends more especially in the cheek towards the malar bone and as far as the commissure of the lips; that is to say, it fills almost the whole of the parotid region as far as the lobule of the ear, extends as low as the upper third of the neck, and has its point of maximum intensity in the face.

The adeno-cellulitis, on the other hand, the upper third of the swelling is in the face, while the lower two-thirds fill the cervical region, and often extends as far as midway between the clavicle and the jaw. It gives rise to a greater degree of swelling, especially towards the lower border of the jaw, and has a special tendency to extend towards the sterno-mastoid muscle. In a case of adeno-cellulitis, the finger introduced into the mouth can be insinuated into the geno-maxillary

sulcus between the jaw and the cheek. On the contrary, in a case of subperiosteal abscess, the sulcus is obliterated, being filled by the tumefaction and pressure on the jaw gives rise to pain. In adeno-cellulitis the gingival cul-de-sac is free, pressure on the lower jaw causes no pain, and if the mouth can be opened sufficiently wide the finger is able to detect a slight degree of œdema on the floor of the mouth, causing some elevation of the tongue.

Pain on a level with the tumour is not a good diagnostic sign, for it is intense in both cases; in adeno-cellulitis, however, its seat is not so high as in periostitis, as it is on a level with the affected gland, whereas in the latter the seat of pain is on a level with the jaw.

To sum up: in periostitis we have a diffuse swelling, occupying the region of the face, painful on a level with the jaw-bone; in adeno-cellulitis a swelling, occupying the sub-hyoid region, more circumscribed and painful on a level with the inflamed gland. Fluctuation is a symptom of very little value so far as diagnosis is concerned.

The prognosis of these two affections is also widely different. Adeno-cellulitis is a disease of the strong and healthy, and is usually very mild except in a few exceptional cases. Subperiosteal abscesses, on the other hand, are very slow indeed to heal. They may be accompanied with phenomena of some gravity and end in death during the first week. I thus saw, amongst other cases, a young woman of between three and four and twenty die within forty-eight hours in consequence of phlebitis of the jugular and ophthalmic veins. It is occasionally possible to ward off this unfortunate termination; in cases of this nature, therefore, which present very acute symptoms, remedial measures must be resorted to very early. On the contrary, when there is but little fever, the pain is not very great, and you are not quite certain whether there is any fluctuation or not. You must wait, especially in cases of periostitis; for you may not only meet with very severe forms but also very mild ones, which may recover in the course of a few days, without requiring any incisions, simply by the application of mercurial ointment and poultices. In other

cases, such as a circumscribed subperiosteal abscess, it is absolutely necessary to make an incision through the mouth.

Thus, in cases of adeno-cellulitis or periostitis giving rise to accidents, early surgical measures are called for; if there are no accidents a resolatory form of treatment may be followed by a cure in periostitis, but much more seldom in adeno-cellulitis.

Let us, however, leave aside the cases where a discutient kind of treatment is all that is required, and let us treat only of those cases in which surgical measures are called for. We will suppose that there is a diffuse swelling of great size; pus is present but it is difficult to make out the precise seat of the abscess, how and where must the abscess be opened? A proper differential diagnosis must of course have been made at starting, for if we have to deal with a case of adeno cellulitis, we must come down upon the gland, whereas, if we have to deal with a subperiosteal abscess we must seek for the bone.

In certain cases in which the gingival cul-de-sac is swollen and painful, we may incise through the mouth on a line parallel with the jaw beginning with a slight puncture in the cul-de-sac, close to the bone, so as not to wound the facial artery. If a small quantity of pus exudes, we must pass a grooved director and enlarge the opening. But more than this is often required and we must then make a counter opening. In these cases, the director introduced into the first opening is directed backwards towards the angle of the jaw, so as to be felt through the soft parts; and, at this point, we make a second opening through which we can pass a drainage tube.

In some cases nothing comes from the opening in the mouth, we must then make an incision along the lower border of the jaw, taking care not to wound the facial artery. Moreover, it is especially in such cases, that the differential diagnosis between adeno-cellulitis and subperiosteal abscess comes to have so much importance, for in the former case, the artery is pushed down deeply, whereas, in the second, it has on the contrary, a tendency to become more superficial. That is the reason also, why it is of so much importance to determine the

precise position of the angle of the jaw, which is not at all easy at first sight owing to the degree of swelling. There is, however, a certain way of doing this, and upon this I shall touch again by-and-bye. When you feel the angle of the jaw beneath the finger, incise, and lay both the periosteum and bone bare. You need have no fear now of wounding the artery, for you insert your director into the periosteal sheath in such a way that it may project at the symphysis menti, where you make a counter incision without any danger. You now pass a thick drainage tube, which cannot be dispensed with in cases of subperiosteal abscess for fear of the wound closing and a new collection of pus forming.

In adeno-cellulitis, you have to deal with a well-marked sub-hyoid swelling, which extends to the jaw, and I will assume, which gives rise to accidents of some gravity. The purulent focus, of rather a small size, is so to say, lost in the midst of a voluminous swelling. You must incise in such a manner as to come at once upon the focus and you then have immediate and considerable relief.

A few minutes ago I told you that in cases of subperiosteal abscess you must find the angle of the jaw. I may also add, that in a case of adeno-cellulitis, you must know how to find out the gland. But how? With a pen mark the symphysis menti and draw a line along and just beyond the lower border of the jaw; on the other hand, make out the posterior border of the ascending ramus of the lower jaw, draw a line starting from a little less than half an inch in front of the cartilage of the ear, bring it down vertically, and the point at which this line intersects the one starting from the symphysis will mark the angle of the jaw.

As to the gland, you all know that it is situated about midway between the angle of the jaw and the symphysis, but as it may have been somewhat displaced by the swelling, mark a point a finger's breadth below and carrying your bistoury in a somewhat oblique direction, boldly insert the point and turn the knife in the wound. If nothing comes away, or at most a few drops of blood, withdraw the knife, take a director, introduce it at the same spot and move it about gently, when you will most likely get a few drops of pus. Then withdraw the

director, give it a slight curve and incise towards the front. An incision about a third of an inch long (15 millimetres) is generally all that is required and with a few poultices you will usually obtain a rapid recovery.

Reflections from the Surgery.

A CASE IN PRACTICE,

UNDER THE CARE OF

MR. G. H. GOODWIN, DENTIST, DERBY.

Mr. Goodwin communicates a case of considerable interest. He says: "A medical man, Dr. W., a friend of mine called in to see me regarding a troublesome lower bicuspid stump. It was the second bicuspid on the right side. Upon examination it was found to be so wedged in between the first bicuspid and first molar, that it was impossible to extract it without previously removing one of the other teeth. Dr. W., however, would not undergo the operation without the aid of chloroform; so I called in a medical practitioner of this town.

When our patient was quite insensible, I extracted the first bicuspid, and then the stump of the second. After stopping the bleeding a little, I replaced the first bicuspid tooth again, which is now thoroughly set, and gives not the slightest pain whatever. In fact, Dr. W. says he can bite upon it as well as ever he could.

Dr. W., writing after the lapse of some time, gives the following account of the progress of the case: The tooth itself soon became firmly set. The discomfort suffered by Dr. W. was simply some slight irritation, which was present on the first and second day. The patient was able to masticate with the utmost ease, and without the slightest pain. As to local treatment, none practically was resorted to, save the application of a little myrrh and alum.

British Journal of Dental Science.

LONDON, OCTOBER 15th, 1885.

AN ODONTOLOGICAL SOCIETY FOR MANCHESTER.

Those who have watched the development of dentistry during the past few decades will have seen that there has been a fresh spirit infused with its advance, which has shown itself only quite recently. Self-seeking and individual aggrandisement, however much the fault of certain sections of the dental profession, are vices alien to the men who are justly called the leaders. The spirit among these and indeed among all the more educated dentists has tended towards association and good fellowship. The purposes of the profession are best served, as is now justly inculcated and received, when men meet together and discuss professional matters. Views the most diverse are honestly held by members of the dental profession, and it is the opportunity which societies afford for the ventilation and discussion of such views which render these meetings so valuable. To the mere windbag—and every profession has such enrolled in its ranks—society meetings afford merely an opportunity for bombast and meaningless verbiage adorned, it may be, with the scantiest seasoning of poetry ; but to the scientific dentist, they offer an occasion for elaborating research or for eliciting from kindred spirits a solution to some knotty point or elucidation of some obscure “case in practice,” which have occurred in the consulting room. London and Edinburgh have long had their societies, and few will question the valuable aids the profession has received at the hands of the Odontological Society of Great Britain. The Midland Counties recently inaugurated a fresh adventure, and the Midland Odontological Society bids fair to pursue an honorable and useful career. In Manchester, which has now its dental hospital and carefully-elaborated scheme for training dental students, the want has long been felt of some society which should bind into one brotherhood and fellowship the dentists of Manchester and its environs.

To fill this want the Odontological Society has been started.

What are the essentials to the success of such a body? may be asked, and we do not hesitate to reply, that given the want, there only lacks a clever and business-like *personel* among the office bearers to promote such a consummation. As we have indicated, this want has in the case of Manchester been seriously felt for some time. Busy men can hardly run up to London to attend the "Odonto," especially when a long agenda sheet may crowd out precisely the item they desired to be enlightened upon.

There are, undoubtedly, more than enough men of energy in Manchester to keep the Society going, and preventing its degenerating into a mere chit-chat club. The list of officers contains the names of men well known and respected, and gives earnest of a prosperous future. The objects of the Manchester Odontological Society, as set forth in the prospectus, are said to be "the diffusion of knowledge of dentistry and matters bearing upon the dentist's art, as well as for the promotion of intercourse among dentists." The meetings will be held monthly, when papers are proposed to be read and objects of interest exhibited. If the Manchester Dentists support the new fledgling as they undoubtedly should do, we may anticipate that many useful evenings will be spent at the meetings of the Manchester Odontological Society. When the Midland Odontological Society was started there was some foolish talk about its dividing the dental world and so injuring the original society in London. This was pointed out by us at the time as amounting to midnight madness. The effect of provincial societies must be always beneficial to the central society. The large towns have enough men and enough material to provide a good local society, and if any daring spirit feels moved to shiver a lance in the lists of the London 'Odonto.', he will still do so, and will be all the better prepared by reason of having had practice in a local society. We do not, however, expect the Manchester dentists will be contented with forming a society which shall be purely local. We suspect that their ambition soars higher, and that they will try, and we wish them every success, to render their society one which, by its

good work and skilled management, will become known far and wide, while we may expect that some day the society's transactions will be referred to as containing papers of value and interest. In the matter of dental societies, the Americans are in advance of us. They count their societies by the score, and their journals are teeming with more or less useful and instructive papers which have been contributed to the transaction of one or other of them.

It may be said that the branch meetings of the Association afford ample scope for local societies. This is wide of the fact, however, as, besides being more or less committed to certain views and rules, such meetings lack the spontaneity and go, which must be present in a society which purposes to arise and prosper in a town, and looks for and asks for no support save among the immediate promoters and their friends. The Association does good work, but we think that there is room, and abundance of room for the institution of local societies for the promotion of professional knowledge and fellowship among dentists.

THE BENEVOLENT FUND OF THE BRITISH DENTAL ASSOCIATION.

The recent Annual General Meeting of the British Dental Association has not, we are sorry to say, shown that the Benevolent Fund has prospered quite as it should do. The report of the secretaries, shows that there are increasing claims upon its coffers, coming from all sides, and yet the support it meets with, comes but from a few. When we reflect, as the report shows, to demonstration that this Fund is for the benefit of all, whether members of the Association or not, it is surely not too much to expect that the helping hands should be more numerous and that all alike should contribute towards replenishing the funds at the disposal of the secretaries. It seems to us that the most impartial efforts have been made to employ the monies justly, and to the greatest advantage, and that these efforts have been crowned with success. But like that of the Horse leech's daughter's voice, the cry is "Give, give," but unfortunately the profession,

when themselves asked to return the compliment, do not see it in the same light. None of us can probe the future, the man who to-day is in the hey-day of prosperity and success, to-morrow bemoans an inevitable ruin which stares him in the face. In the time of success let us provide against vicissitude, and support provident institutions like the "British Dental Benevolent Fund."

NATIONAL DENTAL HOSPITAL SUBSCRIPTION DANCES.—The second series of these dances are announced for the Wednesdays falling October 28th, November 25th, December 16th, and Monday, January 25th, 1886. The first series held last year were so pronounced a success that there can be little doubt that a like meed of popularity and prosperity will be accorded to the forthcoming series. The tickets issued are limited in number and are obtainable from the patronesses (for a list of whom see our advertisement columns), the stewards, or the secretary, Mr. Arthur Klugh.

TEETH IN THE NOSE.—A singular case is reported by Dr. Branch, in the *New York Tribune*, of a small colored boy in Basseterre, West Indies, who has two large teeth in his nose. A portion of his nose having been destroyed by ulceration, he was put under medical treatment for that disease, which soon healed with the application of chloroform ointment and the administration of iodine of potassium. The Doctor's intention was to have made a new nostril for the boy, but while awaiting to make sure of the cure of the ulcer, these teeth began to make their appearance. Dr. Branch says that they seem to be the two central incisors of the permanent set; they spring from the floor of the nostrils at the sides of the bony septum, are freely movable, and are apparently attached to the mucous membrane only; they have little or no roots, but large crowns.

THE paper entitled "Practical Methods in Practice," by Dr. Alton Howard Thompson, an abstract of which appeared in our columns in our issue of September 1st, was published *in extenso* in our contemporary *The Dental Cosmos*.

LARGE MOUTHS.—A correspondent of that literary reformer *Items of Interest* says he took an impression of a “ladies’” mouth (*sic.* !), which measured two-and-a-half inches across and from back to front through the centre of the mouth, one and three quarter inches. This “ladies ” mouth seems to have been merely infantile in size when compared with that of “Sojourner Truth,” a lady of colour, who began life as a slave and ended at the age of one hundred and ten as a lecturer. She was the happy possessor of a jaw, the cast of which measured four inches across and three and a half from front to back. That is a good jaw even for a lecturer.

THE BEST METHOD OF CLEANSING THE TEETH.—There is a dentist in Philadelphia who is going to make a fortune. He has discovered that the rinsing of the mouth with brandy is better than a brush for cleansing the teeth.

We are indebted to the *Dental Register* for this spicey discovery. Would anyone like to try the recipe “on this side?”

PREPARING WAX FOR BASE PLATES.—A correspondent to “*Items of Interest*” writes:—“The following is my method of preparing wax for base plates: I melt the wax and pour it into tin-pans about one-quarter of an inch in thickness, and take it out when cold and put into warm water until quite soft, and use a clothes wringer and reduce it gradually until it is as thin as I wish to have it, which method, I find, is far superior to using a rolling pin.”

DENTAL HYGIENE.—M. Gallippe, in a discussion before the *Société de Médecine de Publique de Paris*, on dental hygiene in schools, insisted on the fact that overtaxing the brain by over-study in school affected dental growth. Among those students who work hard, the teeth become deteriorated a few weeks after their entry; caries is frequent among the successful pupils; the second dentition is frequently premature, and the teeth that appear are diseased. Among students who are really overworked, it frequently happens that the teeth begin to decay when hard work reaches its maximum at the

time of examination, or those that are faulty grow worse, become very painful and have to be extracted.

THE *London Medical Record* does well to draw attention to M. Gallippe's remarks upon this subject. In England the dentist is not considered a necessary member of the medical staff of schools, and is only called in as a rule when a tooth is deemed by the "doctor" as requiring to be taken out.

THE BROMIDES IN INFANTILE THERAPEUTICS.—In a clinical lecture on this subject, Dr. Jules Simon says that the bromide of potassium was first employed as an anti-syphilitic remedy by Puche and Ricord. Lencock, Brown-Séguard, Gubler, and others, have frequently recommended it in the treatment of neuroses, and especially in epilepsy. One may get an idea of the increase in the use of this drug from the records of the Paris hospitals. In 1855 seven pounds and a half were used, and in 1875 eighteen hundred and twenty-five pounds were used in these institutions. What, in infantile therapeutics, is the method of using this drug? What nervous symptoms does it oppose? In order to answer these questions it is first necessary to know in what forms and doses the bromides should be employed. Of the alkaline bromides in general use, the bromides of potassium, sodium and ammonium are the most common. The bromides of potassium and iron, and the bromhydrate of quinine are also used. As regards doses, the following rules should be observed, according to the age of the patient. Infants less than one year old, gr. iij, in two doses at the time of nursing. More than one year, gr. vj, in two doses in syrup or powder at the time of eating, but always well diluted. More than two years, one may give grs. xv, xxx, or xlv until a marked physiological effect is produced. In some cases very large doses are required; in others increasing doses for five or ten days, then decreasing until it is suspended altogether. This method is very applicable to the treatment of epilepsy. As to the physiological effects of bromide of potassium, it diminishes reflex sensibility of the mucous membrane of the pharynx and fauces. Small doses stimulate the gastric

mucous membrane and increase the appetite ; large doses irritate the stomach and may cause intense gastralgia. After being absorbed, the bromide of potassium slows and regulates the heart's action. It is not so dangerous as digitalis, but it cannot be given indefinitely in cardiac affections. As soon as the effect is obtained its administration should be suspended. The continued use of it enfeebles the muscular system and the genital organs. The bromide compounds are eliminated by the respiratory organs and the glands of the skin. The bromides are indicated in eclamptic manifestations and cerebral irritability. In epilepsy, progressively increasing doses should be given for several days, and then gradually diminished. It is necessary to keep up the administration of it for a long time after the attacks have ceased, beginning it for fifteen days in every month. The combination of the bromide with the iodide is especially indicated in epileptic attacks symptomatic of cerebral lesions. Bromide of potassium is also indicated in certain morbid symptoms of adolescence, as cephalalgia and cardiac irritation. In connection with convulsions and other morbid phenomena of nervous origin in children, which are due to tooth irritation, the bromides are remedies which, if carefully used, are very valuable.

Abstracts of British & Foreign Journals.

‡ THE ARCHIVES OF DENTISTRY.

SOME METHODS OF SEPARATING TEETH WITH WEDGES.

By Dr. DWIGHT M. CLAPP, of Boston.

Separating teeth by some means or another he holds to be an essential, although a very unpleasant method of dealing with teeth. For a long time rubber was the only thing used for separating. It has good and bad qualities causing pain and annoyance. It slides into contact with the gum, and causes great pain and soreness, even suppuration, hence

‡ Read at the joint meeting of the Mass. and Conn. Valley Dental Societies held at Worcester, Mass., June, 1885.

Dr. Clapp has entirely abandoned its use. The best rubber to use, if used at all, is that of which the most is made into elastic tubing, or the erasers sold by stationers. Wedges of wood are well adapted to cases where the sides of teeth to be wedged are nearly parallel, or where there is less space at the gum than at the points of the teeth. The wedge should be about as wide as the length of the crown, extending from the cutting edge to the gum. It should be so shaped and trimmed as not to irritate the tongue or cheek. The wooden wedge is more cleanly than tape, cotton, or silk. This same class of teeth, those with nearly parallel sides, can be separated as successfully, and with less pain, with tape. Linen tape of various widths and well waxed is the best. It should be folded so as to be of the proper width and thickness, and then drawn into place. A sharp knife is preferable to scissors for cutting off the ends. The tape should be thoroughly waxed, which assists materially in getting it between the teeth, and renders it more cleanly when left in the mouth several days. In teeth with cavities so situated that cotton can be crowded in with sufficient force, this is a good wedge. The cotton must be so placed that expansion will be exerted against adjoining teeth and not expanded within the cavity. Changing the cotton once often gives space enough. It is difficult to adjust and keep wedges in place between teeth having more or less space at the gum, and touching only at a small point near the cutting ends. In these cases ligatures of various kinds are useful. The superior central incisors usually have but a small point of contact, with considerable space between them at the gum, and it is very difficult to put in a wedge of rubber, wood, or tape, that will not slip up against the gum, or come out altogether. If a ligature is used, the knots can be so tied that the string will clasp the point of contact in such a manner as to hold it quite firmly in place. There are many ways of making the knots; one is to pass the silk once between the teeth, then tie a surgeon's knot; but, before drawing it up, pass one of the ends again between the teeth, and then draw the knot so it will wedge from the gum towards the cutting ends; draw it closely, then finish by tying so that the last knot will be at the labial, or palatal side.

of the teeth. Another way is to make a series of knots like a chain stitch in crochet work, thus enlarging the silk for a suitable length ; draw this between the teeth and tie as before, omitting the first knot that is drawn between the teeth. Another, and a very good way of enlarging the ligature, is, after well waxing it, to roll a little cotton around the silk as you would around a broach for wiping out a root canal, and draw this between the teeth and tie the same as when the silk is knotted. Still another method, easy of application and very effective when a cavity exists in one or both of the teeth, is to secure a pellet of cotton with the ligature. The silk is placed between the teeth in some of the before-mentioned ways ; a pellet of cotton is forced into the cavity, projecting against the adjoining teeth, then the silk is tied firmly around the cotton. The swelling of the cotton and silk will make all the space necessary between any of the front teeth with but one application. The bulging of the cotton into the cavity or cavities, caused by tying the silk around it will hold it securely in place. He sometimes opens the cavity with an excavator or chisel before wedging, thus retaining better the cotton. For bicuspid and molars more than one application may be needed if much space is required. Quick wedging is sometimes possible, and when it can be done readily is usually desirable. Teeth that move easily may be separated sufficiently for ordinary operations by placing a wedge at the point of contact, and another near the gum, applying force gently with the hand, or light blows with a mallet, first on one, and then on the other, until wedged enough. Then remove the wedge that interferes most with the operation, leaving the other in place. Easily moveable teeth or those of children he treats by inserting a large piece of rubber, this he leaves 15 or 20 minutes, when the rubber will have opened a considerable space. A wooden wedge will keep the teeth from springing together while the work is being done.

INDEPENDENT PRACTITIONER.**DAS ZAHNÄRZTLICHE INSTITUT DER KÖNIGLICHEN UNIVERSITÄT ZU BERLIN.**

By PROFESSOR W. D. MILLER.

The Berlin Dental Institute is a part of the University, where all Dental students matriculate. As ladies may not matriculate at the University, they cannot be admitted to the study of dentistry at the Institute. Foreigners are matriculated on presenting a passport alone, without reference to their previous education. Germans, however, must have passed the examinations for the Prima of a German Gymnasium, or first class Realschule, equivalent to a preparation for the Freshman year at the best American Colleges and Universities. Foreigners wishing to attempt the State Dental Examination are required to present a petition to the Kultus-Minister, who determines the conditions for admission to an examination in such cases. Germans must in addition to these requisites for admission have had four semesters of University study, and practical exercise in mechanical dentistry. Four semesters (18 months) are equivalent to four years in the majority of American Dental Schools.

Germans failing to obtain the pass and going to America, can obtain a D.D.S., but this title is valueless to them and rather stamps them as persons unable to pass the State Examination in Germany.

The term Dentist, or Dentiste, applied to the possessor of D.D.S., is little less than a term of reproach. A person calling himself "Zahnarzt" is liable to prosecution. The Deans of the dental colleges do well in taking steps to remedy the evils for which they themselves are measurably responsible, but they must take many and long strides before they succeed in removing from American Dentistry the stigma which some of them have helped to bring upon it.

The Dental Institute opened last October has proved a success. The rooms temporarily occupied have become over-filled, and new ones are already in requisition. Over 80

students of dentistry matriculated at the University. A new building, devoted exclusively to dental purposes, is promised. Lectures on anatomy, physiology, surgery, materia medica, etc., are heard at the University. The work done at the Institute is conducted by Prof. Busch, and comprises oral surgery, including extraction ; also by Professors Miller and Pætsch, who take the conservative treatment of the diseases of the teeth and their nearer complications ; Prof. Sauer deals with mechanical dentistry.

In all departments the students' work is done under the eye of the Professor.

The instruction given in the operating rooms is similar to that of American schools. It is more general; thus, it includes all methods of using gold, both cohesive and non-cohesive—even Herbst's method not being omitted. Tin and gold combined, as well as the plastics, amalgam, etc., are employed.

The students who enter upon their studies in Berlin have a better general education than in America, and are better prepared to enter upon the study of a scientific subject. The Americans are farther advanced in practical dentistry; many, who are sons of dentists, or have worked in dental offices, are able to make very good gold operations on entering. "Approbirter Zahnarzte" come to us to learn those things which many American students know and do on entering college; nevertheless, Zahnarzt is a title of which every possessor is proud, because it represents a certain number of years devoted to general education, and a number of semesters devoted to the special study of dentistry, while D.D.S. is altogether an uncertain quantity, and may represent either capacity or incapacity, learning or ignorance, as the case may be.

* EFFECTS OF ZYMOTIC DISEASES UPON THE TEETH.

By DR. F. S. WHITSLAR, Youngstown, Ohio.

It is necessary to discover the causes of decay of the teeth,

* Read at the Meeting of the Northern Ohio Dental Society, held in Youngstown, O., May 13, 1885.

and also the arrest of the development. Causes of decay predisposing and exciting. With imperfect structure teeth are more likely to decay; defective nutrition and enfeeblement of the vital forces renders them more susceptible to decay. The opinions about exciting causes are grouped as—

1st, Those who regard it as a real disease, a vital phenomenon.

2nd, Those who regard it in the main as the effect of mere chemical action, but due to vital action.

3rd, Those who consider it entirely the effect of chemical action, in no degree modified by connection with a living organism.

The first thing to which we ask your attention as a probable effect of zymotic diseases upon the teeth is the partial arrest of their development. The crowns of teeth bear the marks of interrupted development, they are disfigured by the presence of an irregularly grooved and pitted surface, and are diminutive in size. The incisors are commonly very thin and compressed, the cuspids and cusps of the molars are terminated by sharp points. The enamel and dentine tissues are deficient in quantity, and defective in quality. The enamel is porous, yellow, opaque, and fragile, and the dentine lack uniformity of size. The defect of structure will be found limited to such portions of the several teeth as were undergoing development at the same time, and consequently under the same constitutional conditions. We sometimes find the teeth which are marked by grooves and ridges regularly disposed. The grooves are the result of imperfect, and the ridges of perfect, development of the enamel and subjacent dentine.

Tomes says: "The mucus membrane which lines the alimentary canal is continuous with, is indeed a part of, the external skin with which it blends at the lips, and, that all teeth are alike developed from a part of the mucus membrane, and any connection which they may ultimately get with the bone is a secondary matter."

Salter says: "Teeth certainly are not extraneous organs, as suggested by Hunter, but have a distinct vitality. They undergo nutritional changes by virtue of a plasmic circulation

in their tubular structure, and two of their hard tissues manifest sensibility, which in disease may be exalted to extreme painfulness. The teeth are not parts of the true skeleton, but may be considered as elements of a dermal skeleton. They are developed from the tegument of the mouth, and though closely embraced by the alveolar processes of the maxillary bones, are never in man united to them." While we cannot in every case trace this ridged, pitted, or honeycombed condition of the teeth to the presence of serious illness of the patient during the time when the defective portions of the teeth were being developed, it is probable that an imperfect organization of the teeth, if not the result of a special disease, *e.g.*, measles, is yet consequent upon constitutional conditions. That one tooth is affected as well as those parts of other teeth which correspond in respect to the period of formation will present a similar condition, negatives it being due to merely local causes.

THE SOUTHERN DENTAL JOURNAL.

BONWILL'S METHOD NOT THE BEST.

By GENESE.

The system, Genese thinks, of pressing bibulous paper upon amalgam, or anything coming even in contact with it that has fibre to part with, will make amalgam defective, and cause it to split up in filing or finishing.

Again, it is not safe to join amalgam plugs. The patient may press the metal far above the margin, (if the operator does not), making it more difficult to finish than when in a plastic state, with the possibility of leaving sufficient metal adhering to the dentine or becoming impacted in the alveolar process to cause a constant irritation, and subsequent loss of the teeth, by stripping the pericementum from them; great damage is done by cutting down all cervical walls, leaving no protection where it is most needed.

The patient may not return, either from inability, or finding the teeth comparatively solid and comfortable, thinking it will do at a later date, and so lets the mischief go past control.

Amalgam should be mixed without excess of mercury, and

prepared with as much care as for a gold filling. The cavity must be thoroughly clean, and be dried with alcohol and warm air ; the amalgam is to be packed with smooth, steel burnishers, and finished with spatulas of highly-polished steel, with very flat blades and round edges, bent at different angles. After contouring, a stream of warm water must be forced against the plugs and around the neighbouring teeth, to dislodge any particle of amalgam.

A GOOD PIVOT TOOTH.

By J. ALLEN MILES, D.D.S.

It is simply a plate tooth, using a piece of gold or platina wire, flattened at one end, so as to be riveted to the tooth, the edge of the flattened part to extend to the cutting edge of the tooth, to give strength. Use common tinner's solder for fastening, flowing it over the entire pivot of gold, from one end to the other. Then partly fill the root with soft amalgam, and rub some of same over the solder-coated pivot, and press firmly into position. Now pack harder amalgam on the back surface, so as to draw off the surplus mercury in the root, and build up the back in contour ; after all is hard, trim and finish as usual.

ITEMS OF INTEREST.

HÆMORRHAGE OF THE GUMS.

By G. H. HASTERMAN, D.D.S.

Frank K., ætat 52 years, in good health, presented himself for relief from hæmorrhage of the gums on July 25th, 1885.

On examination all the teeth were in place, remarkably good, the gums and floor of the mouth inflamed, blood flowing freely from the space between the first lower molar and second bicuspid ; right side, with no evidence of violence to the teeth or gums.

The patient suffered a great deal from the intense summer heat. For several days previous, and for fifteen years he has used table salt on the brush in cleansing his teeth. First noticed the presence of blood in the saliva in the morning of the day mentioned, that it increased in quantity during the

day till he applied for relief. A great deal of blood was lost, but he had no pain.

The hæmorrhage was exceedingly difficult to arrest. After the first point was under control the blood forced itself out near the lower incisors and afterwards between the molars on the opposite side, in a very short time.

Warm water and salt treatment was followed by an application of Moosels sol. and cotton, and plaster of Paris packed between the teeth, and this controlled the bleeding.

CARBOLIZED POTASH.

By DR. W. E. DRISCOLL, MANATEE, FLA.

When Carbolized Potash, or the "Robinson Remedy," was first introduced the author waited for others to criticise. This criticism was favourable. The writer procured it for a case where the enamel was denuded from the six anterior upper teeth near and extending under the gum. This patient had many fillings in other teeth. All had been very sensitive but she endured the pain with great fortitude; but in these labial cavities she could not endure the weight of an excavator without shedding tears. The dam being in position he applied the paste of carbolized potash to a cavity, and made repeated efforts to excavate; but it was at least five minutes from the time of application before the carbolized potash took sufficient effect for her to permit him to proceed with the preparation of the cavity. For the retaining points a renewal of the remedy was necessary. When the first filling was finished, the patient said, "Why it works like a charm, I will now have all filled as fast as it can be done." She also said, "The full effect from the first application lasted just seven minutes by my watch." The pressure of the gum to get above the decay was also painful, but the remedy had the same effect as on the sensitive dentine except it acted quicker on the gum.

He has used it with good effect on exposed and aching pulps, when there was not time to do more than stop the aching.

In pyorrhœ alveolaris his experience with it has not been as

great as in cases above cited ; still he feels justified in recommending a trial of it for this disease, judging from the few cases in which he has tried it.

[Dr. Robinson's method is to grind together equal parts, by weight, of carbolic acid and caustic potash. He applies this smooth paste in small quantities to the sensitive cavity or surface, and in a few minutes wipes it away.]

TROUBLE IN MAKING ARTIFICIAL TEETH FIT.

QUESTIONS ANSWERED.

By DR. L. P. HASKELL, CHICAGO, ILL.

This paper is an answer to queries put to Dr. Haskell. In answer to why it is difficult to fit some mouths with teeth, he says :—" There are some mouths into which sets of teeth can be put in with little or no skill, and yet be worn successfully, because *all of the conditions* are favourable. On the other hand when all the conditions are unfavourable, then experience and skill must be exercised, and then it will require time and patience on the part of the patient to learn to use them successfully.

These conditions are, 1st the *favourable* : A rather broad maxillary, not too deep, medium preferable ; a good alveolar process, nowhere flexible ; somewhat soft palate, always expecting the centre to be hard. The lower maxillary retaining most of its teeth, and the closure being under the upper maxillary, and not outside or protruding. 2nd, *unfavourable* : A short, narrow maxillary, the alveolar process all absorbed, having a flexible, yielding ridge ; the palate with scarcely a yielding spot on its surface. The lower maxillary broad, closing outside of the upper perhaps fourth, in some cases a half inch. Such cases are most difficult. *Correct Articulation* is very important, *i.e.*, antagonism of the teeth.

A well-fitting, well-constructed plate is rendered useless from this cause. No amount of suction will long withstand undue pressure in front on one side. The six anterior teeth should never come close together. Patients are often found wearing teeth where they do so close, and the plate is displaced in consequence, but the patient having learned to *manage it*.

The position of the remaining lower teeth has much to do

with the usefulness of an upper set. It is a mistake he thinks always to retain every natural tooth, and is the source often of untold annoyance to those wearing an artificial denture. A safe rule is, the patient is compelled to wear only what is lacking, and *in order to make it as comfortable and useful as possible*, extract whatever teeth necessary to accomplish this end.

To illustrate—a full upper denture is necessary ; on the lower jaw there remains the six anterior ; on one side all the bicuspid and molars are gone ; on the other, two bicuspid remain. He recommends to remove the two bicuspid and bring the pressure on artificial teeth on both sides.

If the lower jaw is a protruding one, it is often necessary to arrange the upper anterior teeth inside of the lower, and set the bicuspid and molars well in, so as to bring the pressure as much as possible under the ridge.

Often, the last molars strike first—this should never be allowed—often, a lower “wisdom” tooth stands at an angle of forty-five degrees. If it meets an upper tooth its only effect is to crowd the plate forward ; do not allow it to meet at all, if this cannot be prevented.

The manner in which the cusps of the bicuspid meet is of great importance. The *posterior incline* of the *lower*, should always press against the *anterior incline* of the upper ; otherwise the plate is pressed forward.

Dr. Haskell's experience in fitting plates is : “ He can always depend on a plaster impression. He finds no use for ‘air chambers,’ except in partial cases, and not always then ; always raise the plate slightly over the hard palate, so that it shall not press there, and rock neither at present nor in the future. Be sure that the plate sets snug to the membrane at the rear for the width of one-quarter of an inch, so the air shall be excluded. This can be ascertained by wetting the plate and *pumping* it ; at the same time it must not *press* at the central portion so as to irritate ; this is the main thing to guard against.”

Carry the plate as high as it can be worn, *especially over the canines*, and making that the most prominent with gum, in order to restore the contour of lip.

Dental News.

MANCHESTER ODONTOLOGICAL SOCIETY.

The object of this newly-formed Society is the diffusion of knowledge and the promotion of intercourse among dentists, which object will be attained amongst others by the holding of monthly meetings, at which communications will be made, and objects of interest to the profession exhibited.

The following gentlemen constitute the Council of the Society : — *President* : Geo. W. Smith, M.R.C.S. *Vice-Presidents* : J. Hooton, L.D.S. ; H. Planck, L.D.S. *Treasurer* : Parsons Shaw, D.D.S. *Secretary* : P. Bett, D.D.S. Other members of the Council : L. Dreschfeld, L.D.S. ; P. Headridge, L.D.S. ; J. B. Molloy, L.D.S. ; J. Taylor, D.D.S.

The first meeting of this Society was held at the Grand Hotel on Sept. 29th. The President and 20 members were present, and many interesting microscopical and other specimens were shown.

A MISSING TOOTH LEADS TO THE IDENTIFICATION OF A MURDERED WOMAN.

By DAVID TAYLOR, Surgeon-Dentist, New York.

Another instance whereby the remains of a person killed by violence, have been identified by means of the teeth, occurred in the State of New Jersey this week. The mutilated body of a woman was found on the 13th inst. on the road near Englewood. Her disordered appearance, the contusions on her head, face, and throat, and the results of the physician's autopsy, indicate that she was forcibly thrown down and strangled. The mystery surrounding the identity of the woman created considerable excitement, several persons having thought they had identified the murdered woman. Recently the mystery has been cleared up by Mr. J. H. Ridgway, a Brooklyn gentleman, who looked at the body and declared it to be that of Mrs. C. J. Fischer, of Canarsie. Mr. Ridgway was positive of the identity from the peculiar shape of the teeth. On raising the lips it was found that one

of the front teeth of the upper jaw was missing, and that the entire row of under teeth had the appearance of having been filed off. The effect produced by parting the lips was very striking, and left no doubt that any person who had known the deceased must have observed the peculiarity at once. It was on this that the identification was based.

ABSTRACTS OF CLINICAL LECTURES ON DENTAL SUBJECTS.

RETRO-MENTAL FISTULA :*

This morning we shall operate on a young man who has a fistula at the back of his chin, and who has already been in the hospital on several occasions.

The patient is only nineteen. Last July, without any known cause, a very painful abscess formed behind the chin. This abscess opened spontaneously, and after some time, as it showed no signs of closing, but had become fistulous, he entered this ward for the first time last August. He did not remain here long, but returned to his work without having undergone any operation.

The fistula we detected at that time has not closed, and the cavity which the fistula leads to has not cicatrized, but has gone on secreting a relatively large quantity of pus, which escapes in a sort of intermittent way. This was the condition he returned to us in, and begged of us to relieve him of this ailment, which makes a perfect cripple of him.

I have examined him again very carefully, and find bare bone at the bottom of the fistula, so I think I may safely say the sinus will not close without a surgical operation.

The teeth are all healthy, very white and hard. They can hardly be looked upon as the starting of the abscess and fistula. One of the left incisors is rather sensitive to cold, but shows no other morbid sign.

* A Clinical Lecture delivered by M. RICHET at the Hotel Dieu, Paris.

If we introduce a probe into the fistulous tract, we find that it comes upon the mental edge of the lower maxilla, not upon the alveoli of the incisor teeth. This leads me to believe that we have to deal with a denudation of the posterior surface of the bone. Is this case an example of those subperiosteal abscesses which we occasionally meet with in young people whose growth is rather retarded.

I had an opportunity of seeing a case of this kind not long ago, in my colleague, Mr. Le Port's, ward. In that case we laid the fistulous tract open with the thermo cautery and then gouged away the diseased bone.

I shall pass a director into the fistula, slit it open to the very bottom, and then proceed to remove the denuded portion of the jaw with a gouge. We shall dress the wound with a piece of charpie steeped in alcohol, so as to make it heal more rapidly.

Correspondence.

We do not hold ourselves responsible for the opinion of our Correspondents.

A PRACTICAL HINT.

To the Editor of the British Journal of Dental Science.

Sir,—Your readers may be interested to know of a useful substitute for the ordinary slab on which oxy-phosphate and other stoppings are mixed. It is a two-inch cubic block of glass with bevelled edges, usually sold as a letter weight. Its advantages are obvious. Always a firm grip on your block, and six sides for mixing instead of two. To clean quickly, rub surfaces of two blocks together, using a little fine sand and water.

Your obedient servant,

GEORGE PEDLEY.

Railway Approach,
London Bridge, S.E.

British Journal of Dental Science.

No. 427.

LONDON, NOV. 1, 1885.

VOL. XXVIII.

THE ADAPTATION OF ARTIFICIAL CROWNS.*

By Mr. CHAS. F. RILOT.

Mr. President and Gentlemen,—

I feel that no apology is needed for bringing the subject of Artificial Crowns before your notice to-night. Since the birth of this Society, in 1863, it has only once been touched upon, and I cannot, therefore, be accused of going over old ground; and, as far as its importance is concerned, I can conceive no higher or noble application of our Science than the replacement of broken-down or discoloured natural crowns by artificial substitutes—substitutes which, when properly selected and adjusted, defy detection even by the most practised or observant eye. As in all other branches of our Art, the indiscriminate and thoughtless use of these substitutes is to be deprecated as much as their total neglect, and it would therefore be well to consider briefly in what cases it would be advisable to adapt crowns, and in what cases it would be better to adopt other measures.

The first question which naturally arises in our minds is, “How early in life is it advisable to crown or pivot the roots?”

This depends on the period of calcification, for it may be laid down as a general principle that roots should not be pivoted until their apices are fairly calcified up. Speaking roughly, incisors should not be pivoted till after the 10th year, canines till after the 13th, bicuspidis till after the 12th, and first molars till after the 9th year. Of course such a table

*A paper read before the Students' Society of the London Dental Hospital of London, Oct. 12th, 1885.

is only an average one, and as some mouths are more advanced than others at corresponding periods, each case must be judged individually by comparison with the other signs of development occurring in the same mouth.

There is another principle which should guide us in deciding whether a root should be sacrificed or saved, and that is, that we should not pivot if the space occasioned by the loss of the tooth can be filled up by the gradual approximation of the adjoining teeth without seriously interfering with the personal appearance of the patient.

Finally, absolute healthiness of the root must be a *sine qua non*. If a fractured tooth, all inflammation of the periosteum must be subdued, and if a dead tooth, the roots must be perfectly sweet and free from all decomposing material. This should, when possible, be determined by the insertion of a temporary filling for a few weeks. All abscessed fangs should be generally condemned. Any attempt to adapt a crown to such a root will only bring dissatisfaction to the patient and discredit to the operator, for though the abscess may be subdued for the time, trouble will be pretty sure to supervene sooner or later, and failure will be the result.

Let us now proceed to consider some of the methods employed in adapting crowns to roots, premising that in every case the root has been rendered thoroughly healthy ; and we will first glance briefly at the methods formerly employed. The root being prepared, a new tooth was selected either natural or mineral. If the former, the fang was removed, and the crown fitted to the root in the mouth. Two substances were used for the pivot, wood and gold. If the former, a piece of hickory filed to the size of the hole in the root was pressed into the crown and cut to a length corresponding to the depth of the canal in the root. The wooden pivot was now pressed up the canal, and the operation was finished. The wood, imbibing moisture, swells out and forms a very firm attachment, so much so, that, in an attempt to remove one of these pivots, the root has been removed as well. If gold had been used as a pivot, a screw was cut in the canal in the crown, and a corresponding thread upon the pivot ; the

two having been screwed together, they were fastened into the root by surrounding the end of the pivot with a thin layer of floss silk, moistening it with mastic, and pressing it firmly home. On the introduction of mineral teeth into general use, the mode of action had to be somewhat altered. In the case of tube teeth, they were used in much the same way as natural teeth, except that the pivot was fastened to the crown by soft solder or sulphur. Where flat teeth were used, in cases of close bite, the operation consisted of fitting a piece of gold plate to the surface of the prepared root, soldering the gold pivot to the plate, and soldering the tooth, previously fitted and backed with gold, to the plate.

This method is still in vogue among many members of the profession, but is becoming gradually superseded by a modified and improved form of the same, known as the Split-Pin pivot, and as this is at the present day the most perfect form of artificial crown that can be fitted to roots which have only one canal, I shall crave your indulgence whilst I describe in detail the *modus agendi*: First grind down the root to about the level of the gum; then, with a medium-sized fissure bur, enlarge the pulp canal considerably all round, but especially towards its lingual aspect, and make a groove about $\frac{1}{16}$ th of an inch from the surface all round the cavity. Then insert the platina tubing, taking care that it passes well up the canal. Pack the amalgam carefully all round the tubing with a fine point, taking care to fill the groove in the wall. It is preferable now to leave the amalgam for a day to set hard, finishing the grinding down the next day. In grinding down the root of a tooth, there are three points which may with advantage be borne in mind: (1.) Use a corundum wheel in preference to a file, because, in the first place, it causes less pain to the patient, and secondly it is easier to give the necessary shape to the surface of the root; (2.) Grind the root down well below the gum in front; on the palatal aspect this is not so important, in fact some operators prefer to leave it just above the gum; and (3.) if possible, make the end of the root convex from before backwards, concave from side to side. The object of this is to prevent the rotating, which is occasionally an objection to this form of pivot. The root being

ground down, take a piece of thin platinum foil, and cut it about the size of the root ; then punch a hole in the centre and pass through it the split-pin wire. Adjust it again on the root with the pin in the canal, and when properly adjusted withdraw carefully, and solder the wire to the foil with a small piece of gold solder over the spirit lamp. Place it again on the root, and adjust the foil perfectly with a bur-nisher, trimming it to the size of the root with scissors. Now fit your tooth, previously backed on to the root, keeping it well below the gum ; when the tooth is fitted, fix it in its proper position with wax, and withdraw the whole thing by means of the wire which has been left long for the purpose. Sink it in plaster and sand, and solder the tooth to the pin and foil, flushing the gold solder all over the platinum, and giving the necessary contour by the addition of scraps of old gold, etc. After polishing, all that is left to do is to fix it in the mouth. In order to make it hold firmly, it is a good thing to bulge the split-pin slightly about the middle by passing a fine point between the two halves, the free ends being at the same time held firmly by pliers. Before dismissing the patient see that the pivot is quite free from antagonism. This form of pivoting has many advantages over the older methods. It can be performed without taking any impression ; it assures a perfect adjustment ; it can be removed by the patient in case of accident to the tooth or injury to the root ; and it avoids the constant enlargement of the canal, which was the usual source of failure of the older forms of pivot.

The forms of artificial crowns already referred to are only applicable where there is a single pulp canal. Not so many years ago dentists hardly dreamed of attaching artificial crowns to bicuspid or molars. Mr. Tomes, in the latest edition of his "Dental Surgery," published in 1873, says that it is only in teeth with single roots that the operation of pivoting can be performed with success. Since then, however, dentistry has advanced by giant strides, and the attachment of artificial crowns to the back teeth is an important branch of our work as Dental Surgeons. Let us, then, glance for a few minutes at some of the different methods at

hand for performing the operation, and to do so we must turn to American literature, for, to our shame be it said, each and all of the different methods are due to the inventive genius, and manipulative skill of our brethren in America.

In July, 1880, Dr. Bonwill introduced to the notice of the profession the tooth-crowns, which have since been known by the name of the Bonwill Crowns. They are all-porcelain crowns, held in position by pins passing through both root and crown, and firmly fixed by means of amalgam. The mode of operating is briefly as follows: The root being prepared, and the apical foramen or foramina closed by a pledget of cotton wool and iodoform wax, or gutta-percha the crown is fitted to the root, and carefully articulated. It is preferable to do this roughly on a model, and then fine fit it in the mouth. The canals are now filled, but not tightly packed with amalgam, and a steel pin is forced through the amalgam to make way for the platinum pin. The latter is grasped firmly with pliers, and steadily pressed home. The amalgam is then packed well around it with a fine point. The crown is now tried on again to see if the pin is in the right direction; if not it can be pushed to one side or the other by condensing the amalgam more on either side. Bank up the amalgam around the pin sufficiently to fill the base of the crown, which should again be tried on and forced home, removing the surplus amalgam if too much, and adding if not enough. When the crown is well home fill the undercut cavity near the cutting edge of the incisors, or in the crown of the bicuspid and molars with amalgam as stiff as can be worked.

Finally remove any surplus around the joint or in the crown, and direct the patient to come the next day to have it finished off. Should a porcelain crown break, another may be easily substituted by removing some of the old amalgam, and applying fresh, mixed soft to allow of easy adjustment. For incisors, canines, or bicuspid with single canals, the large angular serrated pins should be used, but for molars and double-fanged bicuspid the small square pins are to be preferred.

The Western Crown consists of an ordinary flat tooth rendered concave on its inner surface to allow more working room. The pivot pin is spear-shaped and notched, and has soldered to it a piece of plate to act as a backing.

The crown being fitted, holes are punched in the backing to receive the pins of the porcelain crown ; crown and pin are then fixed together with wax, invested in plaster and sand, and soldered with fine solder. Either gold, amalgam, or cement may be used to fix the crown on the root. If gold be selected, the pin must be secured in its place by a pellet of cement sufficient to half fill the canal. Paint the joint between root and crown with cement mixed to the consistence of cream. Cover the labial surfaces, and cutting edges of the porcelain crown and adjoining teeth with plaster of Paris. When hardened, remove all excess, and the case is ready for the gold, which is applied and finished as in an ordinary cohesive filling. Where amalgam is selected as the filling material, use a little more cement in the canal, and apply more on the palatal side of the joint to prevent a dark line showing.

In April, 1883, Dr. Storer How introduced to the profession a new form of porcelain crown since known by the name of the Four-pin Tooth Crown. This, as its names implies, is a porcelain crown having four pins similar to those of ordinary flat teeth, placed vertically two and two. The root is tapped by means of one of a set of screw taps corresponding to the screw-posts supplied ; the screw is inserted in the root, and the crown being adjusted, the pins are bent over that portion of the screw which projects from the root. The contour of the crown is then built up with amalgam, gold, or cement. For the minute details of the operation I would refer you to the *Dental Cosmos*, vol. xxv. pp. 179 et. seq.

In August of last year Dr. How also introduced a form of Dovetail Tooth Crown for bicuspsids and molars which very much resembles the Bonwill Crown in form and method of adaptation, and which has this advantage over the latter, that it may be ground halfway down to the level of the gum for articulation and yet be held firmly by the dovetail sides of the central cavity.

The Richmond Crowns are gold crowns with porcelain faces held in situation by tightly clasping the neck of the root. The following is the way in which they are made. The tooth is cut off nearly even with the gum, and a band of thin gold plate of a width corresponding to the depth of the proposed crown is fitted very accurately to the neck of the root, being made to pass up out of sight under the gum. This is then soldered so as to spring on and clasp the neck tightly. A piece of the gold is then cut away on the labial surface sufficient to allow the porcelain face, made by using an ordinary flat tooth, to be fitted right down on to the root. The band and tooth are then fastened together, invested in plaster and soldered. They are then replaced on the root, and articulated with the opposing tooth. The next step is to form the masticating surface by soldering another piece of plate on to the top. The cusps may be formed by soldering on little pieces of gold. It is now filed up, and a small hole is drilled between the cusps to act as a vent. Insert a platinum pin into the canal, fixing it with cement. Fill the crown with the same material, and drive it firmly home. The surplus cement will escape through the vent, which may be drilled out in a day or two, and filled with a little cohesive gold.

A method of pivoting teeth was introduced by the late Dr. Marshall Webb which probably surpasses all other methods in beauty of workmanship, though requiring great skill on the part of the operator, and much endurance on the part of the patient. It was described by Dr. Field at the June meeting of the Odontological Society, from whose paper I cull the following description of the *modus operandi*. The root being healthy, the step is to close the apical foramen and enlarge the canal as much as possible; the root being ground level with the gum, fit the porcelain crown to root, and back it with thin gold. The pivot wire should be of platinum, and long enough to reach to the end of the canal when soldered to the backing. Now place both tooth and pivot in situation, fasten them with wax; remove the whole carefully from the mouth, sink in plaster and solder the pivot to the backing. Next, by means of corundum or emery disks, cut a groove on both sides of the

porcelain, and across the cutting edge above the backing, into which the cohesive gold must be carefully packed. Having the tooth thus prepared, adjust the rubber-dam, and fix the pivot into the root by means of cement, leaving a space of one or two lines between the porcelain face and the root to be filled with gold. When the isteo is sufficiently hard, remove enough from around the pivot pin to obtain a firm foundation for the cohesive gold ; then proceed to build up the contour of the tooth into the grooves already mentioned ; and finish it off with the same care as an ordinary contour filling.

The Morrison Crown is a crown composed entirely of gold, and is hence only of use for bicuspidis or molars which are not shown in speaking or laughing. The root is prepared as for the Richmond Crown. Now take a strip of gold plate as wide as will represent the length of the proposed crown, fit it as perfectly as possible to the root, so that when soldered it shall be close to the root all round. The cusps are then struck up in special steel dies, and soldered to the band, the depression inside the cap being filled up with solder, so as to allow for articulation. The root canals being prepared as for the Webb pivots with similar wire fastened in by cement, the crown is slightly over-filled with the same material, and driven home to its place by a few smart taps with a mallet, the surplus cement oozing out through a small hole previously made in one of the cusps.

I will not weary you, gentlemen, by bringing before your notice any more of the different forms of crowns and methods of adapting them. Their name is legion, and the bare enumeration of them would take up considerably more time than is at our disposal to-night. I have mentioned sufficient to give a good idea of the amount of appliances all ready to our hands, and in the midst of this abundance the question naturally arises in our minds as to which is the best method to practise. It would be invidious and unfair to answer this question definitely, but I must confess that personally I have found the Split Pin Pivot for front teeth, and the Bonwill Crowns for bicuspidis or molars to answer every purpose, and to resemble as near as possible the lost members they are designed to replace. I certainly think that the porcelain

crowns are to be preferred for appearance to the all-gold or gold-and-porcelain crowns, and that in the majority of cases their durability fully comes up to our expectations, while the fact of their easier and less painful adaptation is by no means an unimportant item in their favour.

I regret that time does not allow me to touch upon the subject of Bridge-work. I think it might be enlarged upon with great advantage amongst us here, and I can but hope that some one more worthy than myself will ere long read us a paper on the subject, and so take it up at the point where I now leave it.

In conclusion, I would venture to give this advice to all gentlemen now working amongst us. Try the different methods for yourselves while you are still students here, and so when you enter the portals of private practice, you may be endowed with that experience and knowledge, which can alone give you confidence and command success.

THE PRACTICE OF ARTIFICIAL ANÆSTHESIA LOCAL AND GENERAL,

WITH ESPECIAL REFERENCE TO THE MODES OF PRODUCTION,
AND THEIR PHYSIOLOGICAL SIGNIFICANCE.*

By DUDLEY W. BUXTON, M.D., B.S., M.R.C.P.

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MR. PRESIDENT AND GENTLEMEN.—In attempting to carry out in the best way the honourable and onerous task imposed upon me, that, namely, of opening a discussion upon the practice and theory of anæsthesia, I think I shall best subserve the end in view by briefly sketching the plan upon which my subject will be treated, before plunging into such details and by-issues as are incident to so wide-reaching a theme as that we have assembled to discuss.

I may remind this Section, that twenty years ago artificial anæsthesia was discussed under the ægis of our great Association, but in the Section devoted to physiology. Then

* Being a portion of a paper forming the introduction to a Discussion in the Section of Pharmacology and Therapeutics, at the Annual Meeting of the British Medical Association in Cardiff, August, 1885.

pharmacology and therapeutics were not what they are now, and hence the relegation of the purely practical subject of anæsthesia to physiology. But now, let us remember that in the Section in which we sit we have to know the physiological side of our therapeutic agents, and to apply this knowledge to the practice of grappling with disease and assuaging pain. And can we carry out such a scheme for anæsthetics, can we, with hope of profit or success, seek to disentangle the thread and unfold a rational explanation of the physiology of anæsthesia, to be followed by the wholly practical considerations involved in the skilled and beneficial application of anæsthesia for surgical or medical practice? It seems to me, that such a course is the only one likely to advance the knowledge of our subject, and to prevent undue prominence from being bestowed upon mere details of practice, details important enough in themselves, but surely subservient to the consideration of those great laws of life and death which underlie our practice in the induction of anæsthesia.

We may start with a proposition that the end and aim of anæsthesia, however applied, is comprised in the rendering a given area insensitive to pain. The more perfect the agent in use, the more truly localised must be its action; and conversely, the more widely distributed be its action, the less safe is the anæsthetic in question. Now, to illustrate this proposition, let us briefly sum up the physiological bases of life. We may, perhaps, be permitted to regard them as a duality, a conscious voluntary portion wherein we meet with receptive end-organs whose function must be to convey impressions for our purpose, we will say painful impressions, from the periphery by nervous strands to the central receptive and perceptive centres, the cerebro-spinal axis; and the second member of this duality is the nervous mechanism whereby the wholly involuntary and unconscious functions of life are carried out. To these we must add the blood-stream, and its physiological behaviour towards the cells, whereby their due regeneration, growth, and function, are performed.

Now clearly anæsthesia might be attained by cutting off the afferent channels from peripheral nerve-endings to nerve-centres, thus leaving these last unaffected. This was pro-

posed long ago by Dr. Waller, who suggested the compression of nerve-trunks, to obviate the pain experienced when their peripheral branches were divided. And again, anæsthesia must result if the sensory paths of the spinal cord, or the perceptive centres of the brain, be acted upon by some agent which annuls their function. In the first case, we have the subject of local anæsthesia brought before us, the abrogation of painful sensation over a given area, and determined by a locally applied agent ; in the second, we find ourselves face to face with the wider and, I venture to think in the present state of our knowledge, more important subject of general anæsthesia.

I have yet to learn if any agent, applied locally, fulfils the requirements of the ideal anæsthetic ; whether it wholly removes pain when peripheral structures are divided, and yet leaves healthy tissues uninjured, while the nervous structures of the cerebro-spinal axis remain unaffected.

Among agents which have been proposed to effect general anæsthesia, I would have us ask ourselves which does most nearly approach the ideal anæsthetic—namely, the one which, robbing the patient of that intensity of sensation which we call pain, will yet not overflow, so to speak, the nervous system, and by its action interfere with rational life ; secondly, and most important of all, which will not impede the due carrying on of organic existence.

In some carefully executed researches commenced in 1882, Dr. Brown-Séquard sought to show that analgesia without sleep could be induced by irritation of the mucous membrane of the larynx, of the trachea, and of certain skin areas. He found (*Comptes Rendus*, June, 1885) that, by using certain (irritating) vapours, he could, in the case of monkeys, dogs, and various other animals, induce a condition in which these creatures gave no evidence of painful sensation, even during cutting or other painful procedures. His method was to allow carbonic acid gas, or chloroform-vapour, to play upon the larynx or trachea, after having done a preliminary tracheotomy to prevent the access into the lungs of the irritating vapour. Stimulation of the trunk of the vagus above the origin of the superior laryngeal nerve, and even irritation of the skin of the

back, will, he asserts, induce this sleepless analgesia. His view is, that the irritation of the superior laryngeal nerves exerts a reflex inhibitory action upon the brain-centres—an explanation which appears to me almost too vague for us to accept, save as a working hypothesis. In applying this extraordinary discovery to the practical issue of inducing surgical anæsthesia, we are met by formidable difficulties. Brown-Séquard had an arrangement whereby his patient breathed pure air for from two-thirds to three-fourths of a second; he then breathed carbonic acid gas, and immediately emptied his lungs. Thus he would take less than half the ordinary period of inspiration for pure air. Brown-Séquard's discovery cannot be said to have entered into the domain of practical anæsthetics; but he assures me that the subject will ere long be placed more fully before the profession.

I may here mention an experience of Dr. Péan's, which, I fear, we seldom meet with, and this is that, in a certain number of cases, he, Péan had found that ether will, while rendering the patient analgesic, yet permit him to retain his consciousness. Indeed, we are told that the patients watched the steps of the operation with evident interest.

I have belief that such cases occur sufficiently frequently to deserve a more thorough inquiry being made into their nature. They are, at least, most curious, and have a truly important bearing upon the question now before us.

As it will clearly be impossible for me to attempt an examination of each member of the large group of carbon compounds which have been used as anæsthetics, I will, with your permission, restrict my attention to some of the most important members of the group. This method, I am convinced, will prove the only possible one, as the subject is so wide, and the amount of information so prodigious, that we should hardly profitably deal with more than a few agents. And I would venture to express an opinion that what we, as workers in this important field of pharmacology, most need, is more thorough and intimate knowledge of individual anæsthetics than a superficial, if showy, acquaintance with the plethora of agents which already gluts the anæsthetist's armamentarium.

The prevailing views advanced to explain anæsthesia by the carbon compounds may be summarised : (1) that they act by lessening oxidation of the tissues ; (2) that they induce physical changes in the blood, which, in their turn, induce anæsthesia ; (3) that they produce anæmia of the brain ; (4) that they are capable of affecting nervous tissue directly.

The first view, advanced with considerable force by Dr. Snow, which again and again cropping up as the subject of anæsthesia has come under discussion, may be said to have been finally disposed of at the hands of the committee appointed by the Royal Medical and Chirurgical Society (*Medico-Chirurgical Transactions*, vol. xlviii, p. 329), who showed that chloroform narcosis, although analogous to, is not, in fact, an asphyxia. Claude Bernard (*Anesthésiques et Asphyxie*, p. 97, 1875) also points out that, whenever asphyxia occurs during chloroform narcosis, it happens only as a result of the narcosis, and is not the precedent and determining cause of that state. And, further, we find actual proofs of these statements ; for Paul Bert (*Leçons*, 1870) found in experiments instituted upon dogs, that the following changes in the blood occurred. Before anæsthesia, 7.5 per cent. of oxygen existed in the blood ; during the stage of resolution, 12.4 per cent. ; and similar results occurred in other experiments.

The only period in which venosity of the blood appeared was when the violent struggles of the individual under experiment impeded respiration, while they enhanced tissue-metabolism. Nor is the evidence brought to a close here ; for the committee appointed by our Association, which, in 1881, produced their most careful and valuable report, found that the exhalation of carbonic acid gas was actually increased during chloroform narcosis.

Dr. Richardson has also shrewdly pointed out that there are very many agents, such as nitrite of amyl, powerful stayers of oxidation, which do not assume the part of anæsthetics. Hence the statement "narcotism is suspended oxygenation" (Sansom on Chloroform, p. 62) must, I think, be taken as non-proven.

Nor, indeed, will the second theory survive the test of experiment. Ludwig Herman (quoted by Wood ; *Therapeutics*, 279), found that, in the lower ranges of the animal world, among infusoria, etc., chloroform produced a species of narcosis. It has also been shown that, if all the blood be drained from frogs, and an artificial saline medium be injected, they live with apparent normality. Now, if these frogs be subjected to the influence of chloroform vapour they become narcotised. (Lewisson, Reichert's *Archiv. f. Anat. und Physiologie*, 1870.) In a similar way, we find members of the vegetable kingdom affected by the vapours alike of ether and of chloroform. The leaves of the sensitive plant cease to shrink if narcotised, and seeds will remain without any signs of germination when exposed to narcotic vapours ; while aquatic plants may be rendered quiescent, as far as growth is concerned, when similarly treated. Now, in all these cases physical changes in the blood can have nothing to do with the matter. It is interesting to note that these narcotic effects in plants, like similar phenomena in animals, are purely transitory. It is an abeyance of vital existence ; the thread of life will again be taken up when the narcotic agent is removed. The theory based upon the assumption that anæsthesia supervenes upon anæmia of the brain, seems to be a case of *post hoc non propter hoc*. Cerebral anæmia certainly supervenes on sleep, and on the torpor provoked by anæsthetics. In the functionally active anæmic brain of the frog, chloroform will induce narcosis. Such, and other considerations into which I have no time to enter, seem to me abundantly to show that these theories are untenable. We therefore have to fall back upon an hypothesis which formulates that the action of this group of anæsthetics is one exerted upon the nervous system itself. We shall also see that to this view a rider will have to be appended, to the effect that this action is one which falls upon the protoplasm of the nervous and of the muscular systems.

Bernstein's (Schmidt's *Jahrbücher*, Band 142) researches are also confirmatory of the view that the nerve-centres are themselves directly affected. He found that the action of chloroform upon peripheral nerves was very slight, thus ren-

dering it very doubtful how much of the struggles and excitement of the second stage of narcosis is due to spinal irritation. Bernard and Bert certainly are opposed to the last view. The former holds that the struggles are purely physical, and shows that after section of the spinal cord no such movements occur. It must then, I think, be conceded that, although these vapours can gain access to the nervous system by the lungs, by serous membranes, and possibly by the skin, yet the action exerted is one directly upon the nervous centres themselves.

Preyost found that, if the encephalon of a frog were touched with chloroform, after deligation of the aorta, narcosis resulted, which passed off when, the ligature having been removed, the blood-stream again found its way to the brain, sweeping away the chloroform.

(To be continued.)

DENTAL DRAWBACKS.

By ARTHUR F. HARE, D.D.S.

“No rose without a thorn.” Quite true! We cannot have all we wish for in this world, though some of us may get more than we want in the next. No unalloyed happiness here; no material good without its accompanying admixture of evil. Such however, is life, and we are forced to accept things as they are, and make the best of them. Pick and choose as we may, every occupation has its disagreeable, distasteful duties.

We come into the world inheriting the germs of disease and death. Let us look for a moment at the manner in which our profession in particular favours and accelerates the development of such germs. Much has been said and written to enhance the glory of Dentistry as a noble, unselfish, self-sacrificing vocation. Its bright side has been exposed to view, and all its vantage-points extolled and lauded. I propose now just to draw attention in a few words to some *decided* dental disadvantages. Not with a view, however, of discouraging the earnest student from pursuing his curriculum, but merely of reminding you of the existence of

certain dental "breakers," if haply, we may in time learn to steer clear of them.

In the present day a general knowledge of the laws of health is fairly well disseminated among the fraternity, and many are there also of the public at large, who do their best to gain every advantage their adoption offers. Nature will idemnify herself, sooner or later, and it is well known that a compliance with her laws is essential to the maintenance of health.

In proportion as an individual respects, and coincides with the laws which regulate the equilibrium of his physical man, in just such proportion will he find his health remain vigorous or feeble, robust or weak : for whether through avarice, ambition, intemperance or what not, he departs from a concurrence with nature's requirements, so in that measure will he suffer in health, and be the loser of the many blessings which health alone bestows.

Nevertheless, there are several vocations which of necessity enforce a perpetual variance with her behests, and wage constant warfare with the best interests of those who choose, or are compelled to follow such modes of life, and kill themselves to make a living. Of such, sometimes, is modern dentistry, the practice of which, all things considered, is one of the surest methods of shortening life, and of rendering existence unnatural.

Subject to certain conditions, labour is profitable and highly conducive to both mental and bodily excellence ; and one of the most important of these provisions is the observance of the laws of health. Whether or not the work be agreeable to us, would be another cause why its performance would be promotive or destructive of health ; but this supposition does not concern us in the present connection.

Now, take a farm labourer for example. There he is :—illiterate—unsophisticated, and ignorant, yet withal a model of physical strength—the very "picture of health," a living reproach to the towns-man, who might well envy his powerful physique. Yet this farmer has but regularly followed his daily toil, and in doing so has become strong and healthy, for *his occupation* offers the greatest possible facilities for the

perfection of physical development, and the preservation of health, and is in the most complete harmony with those laws which govern the well-being of the human economy. Unless he lives intemperately he cannot choose but be a healthy man, *cæteris paribus*.

Now look at the dentist. Brought up in a workroom below the ground—all day there, from eight in the morning till six at night, perhaps earlier, perhaps later; sitting in a cramped and tiring position alongside a boiling vulcaniser, breathing an atmosphere of zinc fumes, acid fumes, etc., etc., instead of the invigorating air of the mountain side. Whether he be working at the bench, or engaged at the lathe, with his nose to the grindstone, the posture he is bound to assume is bad for the shoulders, and worse for the chest. Sometimes the small room is without a fireplace, and a gas-stove does duty as a substitute, helping to keep the room in an unsalutary condition. Pray, what about the fresh air then?

When his time expires, how about his health? If he has not by this time graduated as a first class rebel to nature's hygienic laws, he has ample opportunity of completing his education, when he tumbles "out of the frying-pan into the"—surgery, where in the most "impossible" physical attitudes, under the most unfavourable circumstances, over fœtid mouths, and involuntarily inhaling the noxious exhalations of the lungs, he expends his vital energies on—rotten teeth.

It has been truly remarked of dentistry, that it is "the most exacting of all professions and that success therein, is gained at the expense of health, recreation, and enjoyment," for it is quite obvious that the work of the dentist is neither healthful nor refreshing, as work should be, but anxious and harassing, and not unfrequently, both repulsive and disgusting.

About four cubic feet of pure air is the estimated amount required by the lungs per minute for the thorough oxygenation of the blood. How many dentist are there who can say they breathe *half a dozen* full inspirations of pure air during their daily work?

It is obvious that a dentist who does a large amount of filling injures his health more rapidly and effectually than

does the man who confines his attention chiefly to the extraction and insertion of teeth.

Watch a dentist at work—say, on gold filling in the upper jaw—in one of the molars or bicuspid.

In the first place, he is obliged to stand so close to the patient as to make it impossible to inhale any but contaminated, second-hand air.

Then, with his left arm round the patient's head, he holds perhaps a mirror in the left hand, while the whole arm itself rests uncomfortably high—sometimes with the elbow as *high as possible*—or else so low as to necessitate a stooping posture. The right hand holds and guides the hand-piece of the engine, thus rounding the shoulders to their fullest extent; meanwhile one foot is employed in driving the treadle, and the other bears *nearly all* the weight of the body.

The knees are bent, the body inclined forwards and laterally, the head half upside-down, and the whole frame assuming the most ungainly, painful, ludicrous, wearisome, and injurious attitudes from time to time. These positions maintained for hours, day after day, year after year. Is it any wonder the busy practitioner dislikes long walks after business, or finds himself a prey to chronic dyspepsia, varicose veins, torpidity of the liver, abdominal disturbances, or other kindred affections?

Added to these drawbacks in working, nine out of ten men are inappropriately clothed. Physical exertion, essential for health is good—under certain conditions—but certainly of doubtful benefit when performed in a close, gas-heated apartment, receiving from five to fifty people in the course of the day. The workman in the field removes his coat and braces, and with loosened clothes can “set to” comfortably. The dentist keeps his coat and braces on, no matter what the weather, the work in the surgery, or his feelings may be; even though at times he is called on to perform active and arduous physical exertion, and is, moreover, hampered considerably by the patient's behaviour. He is often practically in the position of a man trying to write, while another is constantly nudging his elbow, or shaking the table.

Again, he is frequently forced to remain for a time in a

constrained position, when, owing to the delicacy of some fine work, he does not respire freely, but has to hold his breath comparatively speaking, while the work is in hand.

A conscientious dentist in active practice, never lives out half his days. Two factors, worry and anxiety, both of which are inseparable from a sincere discharge of his duty, go hand in hand towards cutting short his period of usefulness, and terminating his *artificial* existence. A sailor's or a farmer's life invigorates and hardens, and tends to healthy longevity, Is this the result of twenty-five years in the surgery? Too often the reverse is the case. Dentistry of the present day does much to defeat its own object, by injuring the constitutions of those engaged in its fascinating toil, and thereby transmitting impaired vitality and *unsound dentures* to coming generations. How are future aspirants to this useful vocation to preserve their health? Mainly by *uniform* attention to *fresh air*, *out-door exercise*, and *rest*. But, perhaps, after all, the thorough and conscientious discharge of *dental* duty is incompatible with the preservation of sound health.

REPLANTATION OF TEETH.

By W. MITCHELL, D.D.S.

In a recent number of the *Dental Cosmos* there appeared an article regarding the replanting of a tooth after the lapse of a number of hours from its forcible removal by an accident, and thinking the following case might be interesting, I append it. In January, 1883, a young man presented himself for treatment. The following is the history of the case:— While visiting in the eastern part of New York State about a month before I saw him, he had a pain in a left superior lateral incisor that had been filled some five years previously; the dentist whom he called upon diagnosed the case as one of dead pulp and opened the tooth on the palatine surface, and made applications that seemed somewhat to relieve the urgent symptoms of the case. Upon the return of the patient to Delaware, Ohio, where I was then practising, he presented himself in the following condition for treatment, much pain

and swelling in the region of the affected tooth, digital examination revealed the presence of a large quantity of pus. I removed a large piece of cotton with which the canal was filled, the amount somewhat surprising me, suggesting as it did a pulp canal of enormous calibre; no discharge following its removal, I took an exploring instrument to determine the condition of the canal, when, to my surprise, I discovered another piece of cotton as large as the first, following which a large quantity of pus escaped, followed by arterial hæmorrhage, which, however, was soon controlled. Upon further examination, I found the root drilled through the side, about two thirds the way up, beyond which point subsequent examination revealed a remnant of decomposed pulp, these two causes producing the described result. I mapped out the line of treatment the case seemed to require, and under which all acute symptoms soon subsided, followed later on by the subsidence of all discharge, when I temporarily filled the canal.

In about a week the original state of affairs was repeated, when treatment was again resorted to, this time without visible signs of improvement, when extraction and replanting was decided upon.

I extracted the tooth about three o'clock in the afternoon, after which I syringed out thoroughly the socket of the tooth and the anterior triangular space between the hard palate and the floor of the nares, the cancellous portion of which had been broken down by the extensive inflammation that had supervened, instructing the patient to return next day at 10 a.m.

During the interval I cleaned out the remaining portion of the canal, excised a short arm there was on the end of the root, made a platina tube running the entire length of the tooth which was made tight with a solution of gutta-percha, the drill hole in the side being also closed with gutta-percha. The object of the tube was two-fold, viz., drainage, and ease of filling. On the following morning the tooth was replaced with but little difficulty, being then retained in place with a platina splint. Local applications and systemic treatment was resorted to with the happiest results, in a week the splint was

removed, and in two weeks the tube was permanently filled, all discharge having ceased during the first week.

The patient went on happily, using the tooth for all reasonable purposes till the following August, when biting on some hard substance that had inadvertently gotten in some food he was eating he loosened the tooth, at the same time setting up pain of a very severe type, so much so that he insisted upon the removal of the tooth, to which I assented, his health at this time not being very good, and his recuperative power at any time not being the best.

Examining the root after extraction its surface was found to be fully three-fourths covered with what appeared to be thickened periodontal membrane somewhat inflamed owing no doubt to the recent injury. The remaining portion of the root presented the appearance of perfect health.

I think this case goes to show what a great deal nature will do, even under unfavourable circumstances, where some opportunity is offered.

Two things struck me as being remarkable, viz, the great firmness of the tooth, it requiring considerable traction to remove it, considering the fact that it had *no* bony support except laterally, and that there was an entire absence of elongation so frequently met with in teeth only slightly diseased at the root.

DENTAL SURGEONS AND MECHANICAL DENTISTS.*

ABSTRACT OF A FEUILLETON IN THE WIENER MEDICINISCHE WOCHENSCHRIFT.

According to the Imperial (Austrian) decree of the 10th September, 1842, the Ministerial ordinances of the 21st April, 1864, and the 5th September, 1866, mechanical dentists are forbidden to mount or insert artificial teeth, to take wax casts and to undertake any dental measures in the human

[*This abstract is of interest as showing the relative position of dental surgeons and mechanical dentists in Austria, and the views of one of the leading medical organs of Austria on the subject. If we are not mistaken no one is allowed to practise as a dental surgeon in Austro-Hungary, without having passed the whole of his examinations as a fully qualified surgeon. EDIT. B.J.D.S.]

mouth, as well as to prepare artificial sets of teeth intended to be worn in the human mouth ; any person infringing this decree is to be punished as a quack ; the manufacture of artificial teeth, on the other hand, is to be looked upon as a free trade. Though the terms of these decrees would appear to be set in the clearest and plainest language and not to leave room for any doubt—thanks to the insufficient inspection, of late years, of the dental mechanical trade—a systematic evasion of the law seems to have come to be the rule.

The making of artificial teeth has ceased to be a remunerative trade for mechanical dentists of the old world, since manufactured artificial teeth have been imported in such large numbers from America. It would naturally have been expected that the number of those who took to this trade would have progressively decreased. The reverse has, however, been the case ; the number of mechanical dentists has steadily increased in Vienna and in the whole of Austria. It is a notorious fact that not a single tooth is made in a mechanical dentist's workshop, and that the industry which is forbidden them by law and only permitted to dental surgeons is carried on under the most various pleas. The repeal of this law is the goal for which the "Society of Austrian Mechanical Dentists," and the "Association of Mechanical Dentists" in Vienna are striving.

At the Congress of Austro-Hungarian mechanical dentists which was held at Vienna last May, Herr J. Lough read a paper in which he stated that in 1879, almost immediately after its formation, the Society of Austrian Dentists sent a petition to the Imperial Council praying for the regulation of the status of mechanical dentists ; in 1882, they published a memorial to the same effect ; in 1883, they sent further petitions to the Minister of Commerce and the Governor, and in 1884, in consequence of the new regulations, they constituted themselves into the "Association of Mechanical Dentists of Vienna and Lower Austria." As the patents granted by the Governor of the city of Vienna referred exclusively to the previously mentioned statutes, the Association, in a memorial to the Minister for Home Affairs, asked for the appointment of a Committee for a full enquiry into the state

of their trade ; they also begged him to decide whether, according to the wording of their patent, "a mechanical dentist is to be allowed to exercise his craft or his trade in any way that he may be fitted to, or, whether according to the wording of it, he is to see himself and the members of his family deprived of their means of livelihood." The Government granted the enquiry, and the Association hastened to lay before the Committee a pro-memoria—memorandum—in which they begin by stating that the mechanical dentists do not demand to be allowed to perform any surgical operation ; "we even do not extract teeth." The only requests they proffer are : 1—The establishment of a jury for those mechanical dentists who may already be established, or those who may hereafter establish themselves, which jury should examine every mechanical dentist according to the length of time he has been in practice, and his theoretical and practical knowledge ; 2—A three or four years' apprenticeship with a dental surgeon or a recognised mechanical dentist or the attendance at a dental or a mechanical dental clinic during a corresponding period ; 3—To be permitted to prepare the mouth for artificial teeth, to take wax impressions, to make and insert artificial sets of teeth ; in these must be included (a) the removal of any useless crowns of teeth projecting above the gums, by pinching off, filing or grinding down ; (b) the removal of teeth or roots, if necessary, for the insertion of the artificial set ; (c) the cleaning of healthy teeth ; 4—the filling of decayed teeth ; all these measures, however, when no diseased condition of the mouth can be detected. If these requests be not granted, it will be impossible in future to prevent mechanical dentists from exceeding their right." The report of this Committee has not yet been made known. So far for Herr Lough's report.

What the mechanical dentists of the present day ask cannot possibly be granted, and the way in which they make their request is simply ridiculous. At the beginning of their pro-memoria, they "altogether abstain from the extraction of teeth ;" towards the end they pray to be allowed to remove teeth and roots, useless crowns of teeth, to clean and fill teeth. So privileges which surgeon-dentists only obtain after

lengthened studies at a gymnasium and university and after the passing of examinations, are to be granted to mechanical dentists without any more to do, the greater number of whom have never even attended at any of the public elementary schools? Evidently not. It is true they ask for an examination, but then only one in which they are to be examined according to the measure of their capacities and their theoretical and practical preparation. *Bisum teneatis.*

The stringent law which does not allow mechanical dentists to undertake any dental operations in the human mouth, "does not accord with the present circumstances, because it has been brought about by the disobedience of mechanical dentists," but it altogether accords with the "state of science," of which mechanical dentists speak as the blind do of colours; the law has its *raison d'être* for the extraction of teeth as an operation by itself, just as their preparation for an artificial set; the filling of teeth require a degree of medical knowledge which, in this country, a student of medicine is alone in a position to acquire. The reference to orthopædists and instrument makers only shows how very little mechanical dentists know about these matters. The orthopædist, it is true, "lays his hand on a person," but no more so than the tailor; he does not perform the very slightest operation, far more so, not one that may lead to the effusion of blood; besides which, it is almost needless to state, that in many cases in which, from motives of economy, the public apply to orthopædists, without seeking the advice of a medical man. Not only is the desired result not obtained, but harm is very often done.

The reference to instrument makers is a most unfortunate one. The surgeon has need of him in the same way as the surgeon-dentist requires mechanism; the one makes instruments, the other teeth and artificial sets. But no instrument maker would ever dream on these considerations alone to claim any surgical privileges. That instrument makers try their instruments (which, as everyone knows, they only make according to the directions of surgeons) on the patients is as rash as ridiculous a statement.

The assertions brought against surgeon-dentists that there are men who speculate on making use of the knowledge of others—the mechanical dentists—of whose services they make a traffic in the most unjustifiable way, so much so that they bring those, who refuse to serve them, to despair by threats of exposure—the ironical statement that an hæmorrhage will stop, out of sheer respect, for the diploma of a surgeon-dentist, are statements we will not waste any words upon. We must stop, however, to consider for a moment the realisation of the legal status of a surgeon-dentist, as desired by Dr. Seger. He also asks the question : “ What should a mechanical dentist’s special privileges be ? ” One as well versed in the law as he is, ought to have been able to give his hearers a valuable exposition of the law on the point, for he is well used to long trials. The statement that everyone who has a hollow tooth is not *ipso facto* already ill, that surgeon-dentists are not ordinary medical men, but merely specially diplomaed mechanical dentists, that in the majority of cases they send the patients to some professor, and content themselves with stopping the teeth—these perfectly unintelligible remarks, as well as the further one, that the jury for mechanical dentists should only exact a minimum degree of knowledge are statements intended to redound to the honour of mechanical dentists.

The Governor of Lower Austria, in the year 1880, fully endorsed the opinion of the Viennese magistrates that no change whatever should be made in the laws regulating the business of mechanical dentists. The proceedings of the Congress of mechanical dentists have brought to light, as far as we can see, no grounds for altering these views. The only change which should be brought to bear on the former status of mechanical dentists, would, in our opinion, be a much closer inspection of those mechanicians who do not act as assistants to surgeon-dentists, but assume to themselves, by their own unaided powers, the rights and privileges of surgeon-dentists.

COVERING FILLINGS.

By W. DUNN, L.D.S., Florence.

At the last meeting of the Odontological Society in London, Mr. Charles S. Tomes, in his observations on filling cavities in teeth with amalgam, spoke of the good results he had observed in using amadon in pressing the metal to its place. He mentioned that Dr. Bogue had suggested it to him.

I think it so useful that I hope I shall not be considered presumptuous if I venture to write a few lines on the subject, to call attention to its importance with all kinds of fillings, whether they be amalgam, cement, gutta-percha, or even gold.

I believe, however, that amadon is not the best material to use; I think that paper is preferable, for many reasons. There are many places, such as when a cavity exists in a narrow fissure between two teeth, where it would be difficult to introduce amadon. Again, amadon is so soft and unresisting that it gives no help to form the filling and it is so thick that it prevents one feeling the material which has to be pressed.

Narrow, short strips of letter paper, not too thick and resisting, are handy, and when one is passed between two teeth, with one extremity turned over the front of the tooth to be operated upon, while the other extremity is pressed against the backs of the teeth at the side, it acts as a matrix towards the front part of the cavity. When the filling material is well introduced, if the extremity of the strip which has pressed against the backs or interior parts of the teeth at the side is brought forward and made to cover the filling material, encircling the tooth operated upon by pressing on the outside of the paper, the filling material can be driven into the cavity. The surplus is then squeezed out over the borders of the cavity and forced by repeated rubbing on the paper from under it. The paper can be held by the fingers of the left hand in position until the material hardens, if cement or gutta-percha has been used, and when it is desirable to remove it by oiling it and rubbing it well in oiling it, it separates easily from the filling,—and on removing it a nice rounded contour shape is seen, there is very little of the

overplus which has to be removed, the edges are flush, the surface compact. The space between the teeth, and especially the part near the gum, if it has been well worked in by forcing on the paper at that part, has no necessity to be touched, and this is a part which, I believe, most operators will admit, is a tiresome one to finish off satisfactorily.

It occurs occasionally that the space between teeth is so large that one strip of paper would be too weak and thin. In such cases I put several folds, so as to fill up the space as tightly as I may wish, always taking care, however, that the folds should not be formed of one single piece of paper, for if so, the force which might be required to move it might injure either the solidity or the appearance of the filling; but if the folds are made of two or three separate pieces of paper, then by removing one of these (not the one next the filling) first, the others will come away very readily.

In the case of fillings on the crowns of teeth, when I have introduced the material, I place a strip of paper on it and rub vigorously over it; whether the materials be amalgam or gold, and whether I use the hand burnisher or the Herbst instruments to finish it, I consider that the surface of the metal whatever it may be, is cleaner and nicer, the less I have used a steel instrument in burnishing it—and more satisfactory than when burnished by the agate points in actual contact with it. I need not say that in such a case I have to use more than one piece of paper.

The strips I use for interstitial cavities have the extremities covered slightly with gum. This helps to keep them better in position.

In making a contour filling with gold, especially with the Herbst instruments, the paper would be too weak, I do not use it until burnishing is required, after I have removed a metal matrix—which is formed on the same principle as the strip of paper—that is to say, thin enough to be bent easily to shape and passed between the teeth, bent over the front part of the tooth which is to be operated upon, and on the inner part turned behind those at the side, so that a ready access can be made to the cavity to be operated upon.

British Journal of Dental Science.

LONDON, NOVEMBER 1st, 1885.

CONCERNING "DENTISTS' LEG."

We have from time to time drawn attention to the laws and infringement of laws—which laws are grouped as "Dental Hygiene." In the course of these articles it has been our duty to bring under the observation of the profession certain ailments which accrue to dentists from neglect of laws of sanitation; or are forced on them in the course of their calling.

Some men are martyrs willingly, and as it were a forethought, these enjoy the guerdon of golden crowns. Dentists less happily situated, become martyrs but do not receive any but a scant reward for their self-denying existence.

The very pursuit of dentistry has called into existence new pathological conditions of the human frame, and it is with one of these that we are at present concerned. Dr. George Johnson has contributed to our contemporary *The Lancet*, a paper upon the etiology and pathology of this affection.

He states that overstrain and fatigue when affecting muscles give rise to pain and many cramping sensations in the muscles concerned. He further draws attention to the fact that owing to the constrained position assumed by the dentist whilst tending his patients, the circulation of blood through his limbs (more especially through the muscles and integuments) becomes impeded, and so their function is perverted. As a further development of this theory, Dr. Johnson maintains that the subcutaneous vessels will in like manner become hampered as regards the blood circulation, while the nerves themselves, imperfectly nourished, will convey morbid sensations to the individual. Thus are grouped together the dull aching pain of fatigue, the benumbing sensation experienced when a limb is said, in vulgar parlance, to have "gone to sleep," and the formication—*vulgo*, pins and needles, and their cause referred to impaired blood supply to the part affected.

The views of Dr. George Johnson cannot but fail to carry weight, although it must be confessed that they have been somewhat anticipated by ourselves in the articles referred to above. We are glad that so highly esteemed an authority as Dr. Johnson should have given his attention to a subject which to practical dentists is of such paramount importance. When we come to the question of remedying this evil, we do not gain very much information from Dr. Johnson, and simply because, little or no treatment is needed, provided the practice which leads to the evil can be forsaken.

Of course the main line to be followed would be changing the posture as far as possible so as to avoid any cramping of the limbs. The regular and methodical employment of gymnastic exercises would tend on one hand to prevent the occurrence of "Dentist's leg," and on the other, to obviate the evil consequences of that condition. And here comes in a point upon which Dr. George Johnson has thrown no light, viz. : the results which follow slowly although certainly upon repeated attacks of "Dentist's leg."

In these cases there can be little doubt that an histological change of a permanent pathological nature occurs. It would appear further that such cases would most naturally range themselves side by side with examples of "Scribner's cramp" and the like. We are told by medical men that such cases possess the peculiarity, that while most postures of the affected limb are easily and painlessly assumed, yet one particular position always causes pain and cannot be maintained. And later on there is a tendency to total enfeeblement and even atrophy of certain muscles. If the relation between "Dentist's leg" and "Scribner's cramp" be of a kind of which we have hinted, we can hardly believe it is a matter of slight importance whether or no these secondary changes are warded off. For even setting aside the pain and discomfort arising from this initial stage of the disease, which might be considered rather symptomatic than of the nature of organic disease, we have to consider how grave may be the sequelæ ensuing upon "Dentist's leg." Spastic condition of the muscles with wasting, sciatica of the most aggravated type with descending neuritis, form a phalanx of disease too appalling to be lightly faced or heedlessly courted.

There can be no doubt of the primary importance of prophylaxis in reference to "Dentist's leg." When the subject was brought before the Odontological Society of Great Britain, it was suggested, and we think with great force, that the employment of a Lyons stool for the dentist would save him from contortions and straining, cramping postures, and so preserve him from incurring the risk of getting "Dentist's leg." The condition is of too much gravity for dentists to disregard its first appearance and initial symptoms, so that we cannot urge too strenuously that in this as in other diseases "prevention is better than cure."

GALVANISM FOR NEURALGIA.—Electricity may often be used instead of morphia for the relief of neuralgic pain, and, so we avoid the danger to the patient of contracting the opium habit. Dr. Mattison, of Brooklyn, has found that very weak currents only are required in most cases. The method of application which he recommends is to place the positive electrode over the point of issue of the affected nerve from the skull or spinal column, and the negative pole over the seat of pain. About the head and face the strength of the current should be such, as, when broken, to cause a metallic taste in the mouth, or slight flashes of light. The usual length of sitting is between five and fifteen minutes, but sittings shorter than five minutes may be sufficient for the relief of the pain, or it may be advisable to continue a sitting beyond fifteen minutes if there be steady relief of the pain under the application. The frequency of the sitting should depend upon the frequency of the attack, every paroxysm of pain being met with *an application of electricity* when possible. An illustration of the galvanism cure of neuralgia is quoted from Dr. Tibbitts where a patient had suffered from neuralgia for two years having from six to twenty attacks daily. On the first day the electricity was applied twenty times. Improvement was rapid, the applications were reduced in number in correspondence with the diminished frequency of the attacks, and at the end of a month were made but twice a week. In three months the patient was cured. But there is, as Dr. Mattison points out,

a great want of a small battery. A compact portable machine which, unlike those in vogue, is smaller than a sentry-box, and does not need more than four able-bodied men to transport it from place to place.

BLACK JOINTS.—Dr. Brownlie, writing to *Items of Interest*, says :—"I believe it is impossible to prevent the old joints in a rubber denture from becoming black while vulcanising. While the teeth are being used, particles of food gather between the sections, these become charred by the heat in vulcanising, and cause the dark line which is such an eye-sore to an admirer of neat work. It is not a difficult matter, however, to prevent black joints where you are inserting a new section. I grind the joints the same as I would for a new piece of work, which is as follows : Grind the ends of the contiguous sections so that their entire surfaces touch, and so that you cannot see through the joint with the naked eye ; then bevel the inner side of the joint slightly to give room for filling with plaster or cement, whichever the workman sees fit to use. In new work the joints are filled after the flask is separated and the wax is removed, but in repairing I complete my work as if I were going to flask it, then remove the section, see that both sides of the joint are clean, mix a small portion of oxyphosphate cement to the consistency of soft putty and spread over the entire length of the joint, press the section into its proper position and bed in the flask in the usual way. By following this rule the workman will generally be successful in making good joints."

Abstracts of British & Foreign Journals.

ÖSTERREICHISCH—UNGARISCHE VIERTELJAHRSSCHIFT FÜR ZAHNHEILKUNDE.

PARTIAL NECROSIS OF THE RIGHT UPPER JAW.

Dr. HEINRICH PFEFFERMANN, Dentist, Wien.

The following case is communicated by Dr. Pfeffermann :—

A young private went to him in order to have the first and second right upper incisors removed and to be prepared for a set of false teeth.

Upon examination, it appeared not only both the above-mentioned teeth, but the canine tooth on the same side were also loosened, and when touched, they moved, and with them the parts appertaining to the continuation of the alveolus, on the same side, moved also. In the corresponding part of the upper jaw, the gum was withdrawn about a millimeter, leaving the edge of the alveolus exposed.

Both incisors were extracted, then the canine tooth, and, finally, the piece of the upper jaw affected with disease was removed, the soft part which, in some places still adhered, was severed with bistoury.

No blood flowed during the extraction of the teeth ; on the other hand, the bleeding was tolerably violent during and after the removal of the sequestorum and was obliged to be stopped by plugging.

Eight weeks later, during which the healing process had gone on quite favourably, a mouth plate was prepared.

The part of the upper jaw which was lost was represented by a caoutchouc pad, the facial surface of which was furnished with enamel gums. In this way a capital result was obtained with regard to the personal appearance of the patient, and his having a tolerably long upper lip, added greatly to the success.

Dr. Pfeffermann was quite unable to trace in this case any cause to which he could attribute the disease. He failed to discover any symptom of hereditary syphilis, nor were any signs of scrophula to be discovered, neither were the teeth visibly carious.

DEUTSCHE MONATSSCHRIFT FÜR ZAHNHEILKUNDE.

SIMPLIFICATION OF OBTURATORS.

By Prof. SAUER, Berlin.

Professor Sauer, of Berlin, in speaking of a recent discussion as to the respective merits of the Schiltsky and Suerson system in relation to obturators, gives the following description of his own experience and its results. He has until lately, taken the impression as most others, in the manner

described by Suerson, that is, the impression was taken with black gutta-percha. This was made firm to the shaft of the instrument which formed the continuation of the palate plate which would later on bear the obturator. This plate, prepared with gutta-percha, was then placed in the cavity of the mouth and set in its place, whereupon the gutta-percha extended as far as the wall of the pharynx, in order to obtain the impression of the corresponding motions of speech, breathing and swallowing. It is well known by all who have made many obturators, that the gutta-percha gradually obtains an appendix, a counterfeit formation produced in the act of swallowing by the patient. This defect is the cause of many difficulties. Instead of the impression of the soft palate a round formation is often produced.

A skilful dentist surmounts these difficulties by endeavouring to obtain first a hard kernel of gutta-percha.

Professor Sauer was first induced to construct his new moulding tray, he says, from his experience in a Dental institute where he saw, especially among the younger practitioners, so many difficulties and troubles in this work, harassing both the operator and the patient. Thus, he utilized the above mentioned hardened kernel of gutta-percha to carry out the following experiment. To the shaft of the instrument, which is always brought with the piece for the hard palate, which is to bear the obturator, is added a piece of strong iron wire, thereby lengthening it, and this is shortened to within a distance of the size of a pencil from the partition of the pharynx.

The wire is then turned by bending in the direction of the upper pharynx muscle. If it is necessary to penetrate to the middle of the pharynx muscle the wire can be pushed in.

This surveying of the part where the gutta-percha will be is of inestimable value. Then in the middle of the cleft palate, the running wire is bound up obliquely to a strong wire with binding wire, and in fact, to the broadest part of the palate. Should the palate cleft be very long and broad, two such oblique bindings are made on the corresponding places. These oblique wires must be so much shortened that the space of about the thickness of a pencil remains on either

side between their ends and the corresponding part of the soft palate.

The ends of the wire should not in swallowing and speaking be touched by the muscles in action.

This so obtained firm basis, forms an exact space for the impression mass, appearing on every side the exact position to be occupied taken by the impression. The wire is bent backwards towards the corresponding pharynx muscle, which is to be imprinted, the oblique wire towards the side about the height of the soft palate. The wire is then covered with gutta-percha. Such an impression and the placing of the obturation can easily be made much lower, as very often happens.

Literary Notices and Selections.

* TREATMENT OF PULPLESS TEETH.

BY H. A. KNIGHT, D.D.S., Minneapolis.

IN this paper I shall take the liberty to include under the head of pulpless teeth all which are so diseased as to require devitalization of the pulp, and subsequent treatment, and divide my paper into three sections, namely: Diagnosis, prognosis, and treatment.

Diagnosis, coming from the words *dia*, through, and *gnosis*, knowledge, means in medicine to be able by our knowledge of symptoms to name the disease, and upon our diagnosis depends our prognosis and treatment. Can he who makes no diagnosis intelligently treat disease, or can he expect a favourable termination of his treatment? Must he not rather blindly go forward with his treatment, after some stereotyped plan, earnestly praying for success, and like so many physicians, more fit to do farm work than practice medicine, meet almost constantly with failure.

Not many years ago an aching tooth was fit only for the forceps, and the dentist, if I may call him such, only asked a few questions before applying the remedy. The sacrifice of a tooth was not a sacrifice in the patient's eyes, but

* Read at the Minnesota State Dental Society.

a blessing, for people had been taught from time immemorial that nothing could be done for a tooth after it had begun to trouble. An aching tooth to the dentist was an aching tooth; he knew no difference between pulpitis, periostitis, and alveolar abscess. They were all the same to him, and required the same treatment. Of diagnosis he knew nothing, of medicine less, but of prognosis he had a clear understanding, for it was always the same. If a tooth had never given signs of trouble, and the cavity was the size of a pin head, favourably located, he managed to excavate and fill it, oftentimes very acceptably, while the badly decayed teeth and roots were removed and replaced by beautiful white artificial teeth.

The dentist of those days was but a mere mechanic, and what mattered it if the dentist cut hair and shaved you when occasion required. I speak of the times gone by, but they have not gone by. It was but recently that a prominent dentist of our sister city asked me what I treated teeth with, and I heard not long ago of a member of our local society say that he used carbolic acid for everything in his office and that it was the best remedy he had ever found. Imagine that dentist applying carbolic acid to every case in practice, and then wonder if you can, that he finds teeth that are incurable.

Diagnosis of every case must be made, in order to intelligently apply the remedies within our reach. A case of congestion of the pulp must no more be treated for periostitis, than alveolar abscess for necrosis.

We, as intelligent dentists, should be able to clearly define and comprehend the case in hand before we even dare to turn to our cabinet for a remedy. With the common symptoms of dead teeth, such as occasional slight pain, tenderness on pressure, discolouration, elongation, looseness and congestion of the surrounding parts, we are all familiar, but I bring to mind a class of teeth with dying and sloughing pulps, complicated with slight periostitis whose symptoms so nearly resemble those of a congested pulp as to make a clear diagnosis almost an impossibility. Up to this period you have no marked symptoms of periostial disturbance, and the gum gives no evidence of the serious trouble brewing beneath its surface.

Take for instance a typical case in practice : The patient comes in suffering with toothache in the upper first bicuspid, which may have a large proximal cavity in it, or perchance a filling but lately inserted. All the patient knows of the case is that thermal changes affect it and the pain is most severe. The first question arising in your mind is, what condition is that pulp in ? is it safe to take the engine and bore directly into the pulp cavity ? In a simple congestion, as well as pulpitis, the tooth is affected by heat and cold, and may be slightly sensitive on percussion ; the surroundings remain in an apparently healthy condition, the tooth is firm in the socket, and no cause for the severe pain is visible externally. Just when the congestive period has passed, and the inflammatory process been set up, is a difficult problem to solve, but much dependence may be placed on a minute history of the case. When questioned closely, the patient will almost invariably tell you that the first pain experienced was caused by some cold substance coming in contact with the tooth ; that the pain was only of short duration, but that as time passed, the trouble occurred at more frequent intervals and upon slighter provocation ; even the ordinary atmosphere causing intense suffering. Up to this period, anything warm coming in contact with the tooth, affords relief, but from this time forward affairs seemed to be reversed. Heat becomes the troublesome agent and cold the pacifier, while the pain, instead of making short calls during the day, occurs almost without fail at night, and usually prolongs its visits several hours. It is at this time the periosteum begins to show disturbance, and the pulp passes into dissolution ; the tooth becomes elongated and painful upon the slightest pressure.

When a tooth reaches this stage I class it with pulpless teeth, for to my mind, the pulp has lost its chance for resolution to take place, and if not destroyed by some external agent will, in spite of all remedy, die.

We have coming before our notice all forms of so-called dead teeth, some with pulps dead and putrescent, but intact, some having lost all trace of a pulp, and others, where the disease has progressed far enough to cause alveolar-abscess, or necrosis, of the jaw. The diagnosis of these latter

varieties is not a very difficult matter. By tapping a tooth known to be dead, periostitis, be it ever so slight, can usually be determined. An abscess may be diagnosed by the looseness which usually accompanies it, by the turgid appearance of the gum, and by fluctuation when the pus has pierced the bone and formed in sufficient quantity. Where necrosis of the jaw is found to accompany an abscess, it may be distinguished by an odour peculiar to the pus of carious bone in any other part of the body.

After thoroughly understanding the pathological condition attendant upon the various forms of diseased and pulpless teeth, a minute history of each case should enable any dentist to begin treatment intelligently, and feel warranted in making a favourable prognosis.

In a vast majority of cases, where a tooth can be properly treated and filled, I think the dentist is warranted in assuring the patient of ultimate success, but at the same time many things must be considered in the treatment. Some constitutional diseases, although exhibiting themselves in more marked form on some other parts of the body, exert a special influence upon the teeth and associate parts and must not be overlooked any more than the diathesis of a patient. It would be folly for any dentist to think that a conquest could be made as easily in the case of a patient with an inflammatory diathesis exhibited by plethora and increased capillary activity, accompanied perhaps by the habitual use of alcoholic beverages and stimulating food, as in the case of a young vigorous individual with a clear constitution. Experience has taught us that that class of people, as well as the pale anæmic individual, whose every look indicates perverted nutrition, and the elderly person with enfeebled circulation and nerve force present many very obstinate complications.

The influence of an inflammatory diathesis in the treatment of teeth may be very great as is often exhibited by the scratch of a pin. I have met people upon whom the slightest bruise seemed sufficient cause for intense inflammation and sloughing, requiring weeks for a complete cure. In such a case, healing by first intention is an impossibility. The blood does not seem to possess reparative material enough even for the

natural waste, to say nothing of the accidental. The system, instead of building up, seems inclined to go into dissolution. The influence of malaria upon this class of teeth is often noticed, as well as in the treatment of exposed pulp, and tends to excite the parts when we first begin treatment. According to one writer, it may be detected by the serum or watery part of the blood oozing up through the root. Add to the above causes of modification the effect of gout, rheumatism, scrofula, and other cachexia, upon the human system, and the treatment of dead teeth becomes a profound study, each case presenting peculiarities which must not be overlooked.

Our prognosis must only be made after careful study of the case, and if any doubt exists as to the outcome, we must have the benefit.

The treatment of pulpless teeth is a subject broad in area and full of rich material for thought, for no portion of dentistry has met with more discussion and experiment by the great mass of thinking dentists than this.

Within the memory of some of us, pulpless roots were considered foreign bodies buried in the jaw, of which nature constantly tried to rid herself. The healthy retention of these roots never occurred to the dentist or seemed possible, but the time has come when a dentist who cannot save a very large per cent. of them is considered many years behind in the knowledge of his profession.

The teeth are susceptible of treatment the same as any other part of the human organism. If we have an inflammation in or around a tooth, we have an irritant also. There is always a cause for an effect, and before we begin treating a case we should understand the conditions thoroughly. In order to successfully treat the teeth we must first determine in our minds just what we wish to do and the best method of accomplishing our end, selecting our remedy for a distinct purpose. It is only in this way we can expect the best results, and it is for lack of this so many failures are recorded.

In filling pulpless teeth, a few requirements must be met. The surroundings of the tooth must be free from disease or irritation. the root must be firm in the socket, the canal well excavated,

all putrefactive processes arrested, and the canal well filled to the apex of the root. In order to meet these various requirements we must have full and free access to all parts of the tooth, and here let me say : Don't spare the tooth substance for the sake of appearance. I do not maintain that you must excavate each root to the end, for that would be impossible, but the nearer the apex of each root you get, and the more thoroughly you cleanse and fill the same, the better will be your chance of success.

A few days ago a case came under my notice where a dentist met with a great deal of trouble with a central incisor, simply because he could not get at the pulp.

A dentist of Freeport, Indiana, attempted to fill a small approximal cavity in a central incisor with gold. Some few days after the operation the thermal change affected the tooth seriously enough to cause him to remove the filling and replace it with a phosphate. This in turn was removed, and a filling of Hill's stopping substituted, but to no effect ; the tooth still troubled, and the doctor resolved upon the destruction of the pulp, which he accomplished by access gained through this cavity, and applying his acid at the coronal extremity. After death of the pulp he attempted to remove it through this same cavity without enlarging the opening, which was scarcely larger than the broach itself. He simply attempted an impossibility, and punched on this semi-sensitive mass, time after time, with the result of packing the pulp into the upper half of the canal. This operation was repeatedly followed by hæmorrhage, but at the end of a month he pronounced it ready for filling, and made an engagement. The patient removed here before the day set, and fell into my hands. I mistrusted affairs were not all right, and so opened up from the palatine surface and removed the pulp. What result but an alveolar abscess could he have looked for had he finished his operation. As a usual thing, when you destroy a tooth pulp, you have no serious complications ; the only part interfered with to a great extent, is the pulp, which must be removed to the apex. Ordinarily, it does not become necessary to apply any medical agent, simply syringing out the canal with tepid water being all that is required.

If no hæmorrhage follows the removal of the pulp, you need not fear immediate filling, but in case of hæmorrhage, it is safer to wait twenty-four or forty-eight hours, then syringe and fill.

In the treatment of pulpless teeth, no greater mistake has ever been made than over-treatment. This is a mistake the best of us are very prone to make, and although we may use the proper remedy, success will come only with its intelligent application. Nature is one of the most powerful of all healers, and if the surroundings of a tooth are given a fair chance, after removing the cause of irritation, in a great majority of cases they will return to their physiological condition.

An alveolar abscess may be said to be a discharging sore, within the alveolus, the result of inflammation and suppuration of the immediate parts. Its origin may usually be found in some local irritant, which causes a contraction of the blood-vessels, followed by an equal distention. The result is an increased flow of blood to the part or congestion and severe pain. If this congestion can in some way be relieved at this time, resolution will take place, but if it is allowed to proceed, complete stagnation will be the result, followed by suppuration and a discharge of pus.

To relieve the congestion preceding an abscess, many agents have been employed. The object sought is to change the blood pressure from the head to some more remote part of the body. After removing all the irritants or causes of irritation a good liberal dose of physic is found very beneficial, in connection with a hot mustard foot bath, the feet and limbs being rubbed into a glow. Counter-irritation also is very helpful, and the application of tincture of aconite and iodine, equal parts, directly to the gum, has been useful in my experience. Iodine alone is also very good, painted on the gum after wiping the mucus away. Poultices made of capsicum, or capsicum and ginger, are perhaps as capable of giving relief as any of the various forms of counter-irritants.

In relieving congestion and preventing an abscess forming, prompt treatment must be the rule, for after a certain time has elapsed it seems almost impossible for resolution to take place, and when we have forfeited this chance, the quicker an

abscess forms the better. The length of time intervening between inflammation and suppuration may vary from a few hours to weeks and even months, according to the severity of the irritation and the physiological condition of the patient, and I have found in my experience the length of time required to cure an acute abscess is in proportion to the time it was in forming. The treatment of an abscess must always depend on the conditions existing when it comes under our notice. An acute abscess, the result of pent up gases or irritation, caused by working on a dead root or by accident, does not need any very great amount of care. If nature is assisted in relieving herself of the irritating pus formed, and thorough drainage supplied, with the root properly filled, in a majority of cases a speedy cure will be the result ; but if the abscess has for some time been labouring at a disadvantage, and although less severe than formerly, taken in that chronic condition characterised by thin watery pus, the use of strong drugs will be more urgently demanded. We must first remove the prime irritant, which is usually a decomposed pulp, then supply the drainage for the purulent pus and endeavour to change the surface of the abscess from the passive state of inflammation to the acute. By proper stimulation the surface must be made to produce healthy granular new formation, instead of irritating pus. We must employ some strong drug or escharotic that will change the character of the secretion formed and be a sufficient irritant to excite healthy action. Oftentimes one good thorough application of carbolic or sulphuric acid will so change the character of an abscess as to enable nature to complete the cure. This may be accomplished through the foramen of the root, and in case of a fistulous opening, should be applied until it makes its exit at the gum. Many other agents have been recommended in the place of these, among which are worthy of mention, salicylic acid, iodoform, extract of eucalyptus, etc.

A very good remedy I find in creosote and iodine combined, as much iodine being put in as the creosote will dissolve. This makes a very penetrating volatile oil, which if left in the pulp canal even, will find its way to all parts of the cavity of disease. This combination possesses very nearly all the

requisites in treatment : it is a disinfectant, antiseptic, and an irritant.

The class of teeth most difficult of treatment are those having a chronic blind abscess. The first thing to be done in these cases is to secure an opening through the gum, and here is afforded an opportunity for the believers in heroic treatment to demonstrate the success of their theory. If a tooth in this condition is excavated and filled, the gases forming will cause great pain and distention of the alveolus, and the result will be piercing of the bony walls and an opening in the gum. This condition of affairs, it seems, must be arrived at before thorough treatment can be made, and here the heroic dentist asks, "Is it not better to secure this opening by the use of cocaine and the burr, than to cause all this suffering?"

Another method of treating all forms of abscessed teeth has been to replant them ; you simply extract the tooth, fill perfectly and return to its former position. Numerous cases are on record where this treatment has been very successful, but the absorption of the root of a replaced tooth is very likely to occur and let the tooth drop out like a temporary tooth.

The filling of the root of a dead tooth is perhaps as important a factor in successful treatment as any. There is simply one great law to be observed, namely : Filling the root perfectly with some indestructible material. It is easy enough to say all roots must be perfectly filled to the apex, but not so easy a thing to do. In some cases it seems almost impossible to follow the tortuous canals, even with a fine broach for the purpose of cleansing them, and we find sometimes the openings so small as to not even admit a broach. Numerous devices have been invented, from time to time, for enlarging these canals, and some of them work very nicely. Dr. Talbot, of Chicago, invented a system of reamers, with which no doubt you are all familiar. They consist of a number of triangular pyramidal points of various sizes, bent at different angles, intended for hand use. By rotation they enlarge the canal, removing the chips upon withdrawal, but it has been found impossible to follow a canal with them, and they have fallen slightly into disuse. A very neat little

modification of them has been made lately, which I will exhibit. It overcomes the objection of not following the canal, and I have found it very useful.

The Gates Glyddon Drill has been found very convenient by some, but I have had bad luck with it and discarded it.

In reaming out a root, we should be cautious never to puncture the side of the root ; if it is impossible to follow the canal, it is better to stop right where you are. Your canal having been prepared, the next thing is a choice of filling material ; the case must determine the selection. The utility of each has been amply demonstrated ; whalebone, wood, lead, gold, zinc, gutta-percha, and in fact, almost everything has been used. The object to be sought is to make a perfect filling, and what might be successful in one dentist's hands might prove a failure in another's.

The most difficult roots to fill are the buccal roots of upper molars. Here some plastic material must be used, and gutta-percha cut in chloroform, or zinc phosphate mixed to the consistency of cream may be made to answer the purpose.

The filling of the canals of the anterior ten teeth, is easily accomplished and the material used is a mere matter of choice with the dentist.—*The Dental Register.*

Dental News.

MEDICAL SICKNESS, ANNUITY, AND LIFE ASSURANCE SOCIETY.

The quarterly meeting of the Committee of this Society was held on Wednesday, October 14th, at 38, Wimpole Street, W., the following being present ; Mr. Ernest Hart (in the chair), Mr. Major Greenwood, jun., Mr. E. Bartlett, Mr. F. Wallace, Mr. R. Lord, Mr. Vincent Jackson (Wolverhampton), Dr. J. Pickett, Dr. G. Fletcher (Highgate), Dr. G. W. Crowe (Worcester), Mr. T. E. Parsons (Wimbledon), and Mr. S. W. Sibley.

The report for the quarter stated that during the term 22 new members had joined, three having left by non-payment, and one withdrawn. The total number of entrants to September 30th was 702. The income for the quarter (£1,741 12s. 10d.) was nearly £100 in advance of the previous quarter, while the expenditure (£491 18s. 3d.) was £37 less. There had been a net increase of reserves of £1,249 14s. 7d. on the quarter, and the total capital was now £7,682 15s. 5d. This was appropriated as follows : Sickness-fund reserve, £3,317 11s. 4d., Annuity-fund reserve, £2,698 0s. 2d. ; Life-Assurance fund reserve, £913 17s. 6d. ; Management-fund balance, £670 18s. 8d. ; interest, £82 7s. 9d.

A letter from Mr. J. Bain Sincock on investments, suggesting that a building society should be formed for the purpose of securing a good rate of interest on reserves, was read and discussed. It was pointed out that the Society had already power under its rules to lend on mortgages of freehold or leasehold property, but there was a general opinion that, though this might be done with great advantage later on, it was not advisable to enter into such business at present.

The working of the Annuity-fund was next considered, some members of the committee stating that several intending members were of opinion that the limit fixed was a late age for the annuity to commence, and that it was not likely to be long enjoyed by those who reached that age ; and further, that some dissatisfaction existed at the entire loss of all moneys paid in for annuities where the age 65 was not reached. It was stated, in reply, that the probability of receiving the annuity was far greater than was generally anticipated, as half of a given number of members at the age of 33 were shown, by the mortality tables, to survive at the age of 65 ; while the average expectation of life of those reaching that age was over ten years, thus making the annuity equal in value, to each member reaching the age, to £400. With regard to the other point, it was stated to be the intention to devote the surplus on the annuity-fund (which was considered certain to arise) to the formation of a fund for the payment of sums, on the death of members not surviving to the annuity age.

It was decided to take special means to bring the Society to the notice of the younger members of the profession, with a view to extend its usefulness. Copies of the annual report (to June 30th) and all information, may be obtained from the Secretary (Mr. C. J. Radley), 26, Wynne Road, Brixton, S. W.

STUDENTS' SOCIETY OF THE DENTAL HOSPITAL OF LONDON.

Ordinary General Meeting, held 12th October, 1885.

E. LATCHMORE, Esq., Vice-President, in the Chair.

The Minutes of the previous meeting were read and confirmed.

Messrs. Croucher, Ludbrook, and W. A. Moore signed the obligation book, and were formally admitted to membership by the Vice-President.

The following gentlemen were then balloted for and elected members of the Society :—Messrs. C. C. Robinson, W. H. Kendall, A. W. Frost, F. Miller, A. S. Hayman, Douglas Harris, H. Eskell, F. Lonnon, G. Seymour, C. E. Peckover, R. F. Reading, P. S. Fairbank and A. P. Cater.

The following gentlemen were proposed by Mr. Colyer, and seconded by Mr. Rilot :—Messrs. C. R. Morley, W. J. McDonald, H. Stoner, H. Picton, J. H. Badcock, R. Ackland, J. A. Bairstow, G. Parkinson and S. W. Pedley.

The following gentlemen were proposed by Mr. Whittaker, and seconded by Mr. J. P. Smith :—Messrs. G. H. Acton, T. E. Constant, E. Hodgkinson, C. W. Handley, T. A. Goard, W. G. Stoddart, H. Henry, E. Haynes, A. H. Smith, A. R. Colyer and J. M. Lucas.

Messrs. T. S. Rendall and S. B. Wakefield were proposed by Mr. Crocker, and seconded by Mr. Whittaker.

The President then announced that Mr. Campion had been obliged to resign the duties of Joint Secretary, owing to his having left London. Mr. Rilot was then balloted for, and elected to fill the vacancy caused by Mr. Campion's resigna-

tion. Mr. J. F. Colyer was elected Curater and Librarian, and Mr. J. Mansbridge was elected to the vacancy in the Council.

On Casual Communication being called for, Mr. Acton showed models of a supernumerary incisor, and of retarded dentition.

The Curator announced that Mr. Booth had presented to the Museum three skulls, and models of a Zulu's jaw, and of abnormal dentition; and that Mr. May had also presented twelve specimens of abnormal teeth. He also narrated the history of a case of Dentigerous cyst under the care of Mr. Charles Sims, of Birmingham, and showed the 44 denticles which Mr. Sims had removed from the cyst.

The Chairman then called upon Mr. Rilot for his paper upon "The Adaptation of Artificial Crowns." * A capital discussion followed, in which the following gentlemen took part:—The Chairman, Messrs. England, Robbins, Maberly, Whittaker, Campion, Sexton, Lloyd Williams, Hern, Colyer, Thomson, and Wrighton.

After Mr. Rilot had replied to the remarks made by the various speakers, the Chairman proposed a vote of thanks to him for his paper, which was seconded by Mr. England, and carried unanimously.

A vote of thanks to Mr. Campion for the excellent manner in which he had discharged the duties of Secretary was proposed by Mr. Crocker, seconded by the Chairman, and carried with applause.

Mr. Campion replied briefly, and the Chairman then announced that the next meeting would take place on Monday, the 9th November. The meeting was then adjourned.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

The next meeting of the above society will take place at the rooms, 40, Leicester Square, W., on Monday, November 2nd, at 8 p.m. Papers by Mr. J. H. Balkwill, of Plymouth, on "A Method of Mounting Porcelain Crowns on Pulpless

* See page 971.

Molar Stumps." Mr. W. Hern on "A Method of Treatment of Pulpless Teeth." Casual communications by Messrs. S. J. Hutchinson, C. W. Dunn, Storer Bennett, A. S. Underwood, and an exhibition of Ward's Non-Thermal Lamp.

DAVID HEPBURN,
ROBERT H. WOODHOUSE, } Hon. Secretaries.

Correspondence.

We do not hold ourselves responsible for the opinion of our Correspondents.

To the Editor of the British Journal of Dental Science.

Sir,—In your issue of October 1st, your correspondent, "A Dentist without a Diploma," bewails the existence of a class of itinerant dentists who perambulate the country touting for business, and who turn out their work in such an execrable fashion as to disfigure their patients, etc., etc. All this has my most cordial sympathy and support, and I regret this fact quite as sincerely as your correspondent, and if he had ended here, I should simply have said 'amen' to his remarks and then forgotten them. But when he refers to the terrible calamity that befell the dental profession when chemists practising dentistry were admitted to the Register, and delivers himself of a somewhat abusive tirade in which he more than hints at their cupidity and want of honour; as though he and the section he elects to represent were the sole exponents of all that is decent and respectable in the profession, I think it is only fair that one of those maligned should utter a word of remonstrance in reply.

It is a matter of history that chemists in the *bonâ-fide* practice of dentistry were registered because they had an equal right with all other practitioners to registration—namely, the right of vested interests—and there was no understanding of any kind, real, implied or imaginary, that they would relinquish the "drug trade" on being registered as den-

tists, and there can consequently be no point of honour involved in their continuing, or otherwise, the practise of Pharmacy and Dentistry together, as such joint occupation constituted their only claim to registration ; therefore the remark " that some chemists have acted honourably and given up the drug trade, while others have for the sake of filthy lucre united drug and dentistry together " is based upon false premises, and the charge of dishonourableness on the part of those who continue to follow both occupations is not proven.

And why this high falutin about " filthy lucre ? " How long would the most cultured and scientific in our ranks follow the profession of dentistry *con amore* simply ? Not long I think, for it is at all times the hope of reward which sweetens labour, and if there were no prospective " filthy lucre "—not a specially euphonious name for honestly earned fees—most of us would show our patients but scant courtesy ; however, I think we may take it for granted that in most instances the *only* and in every instance the *chief* object of our toil is the filthy lucre so contemptuously spoken of by " A Dentist without a Diploma ; " so that a wish to be paid for what is done is not a speciality of those who are both Chemists and Dentists. In conclusion, I feel certain the majority of your readers will be unprejudiced enough to agree that dentistry is not dishonoured by the mere fact that it happens to run in double harness with pharmacy ; that the " lucre " accruing from such connection is no more " filthy " than is that resulting from the practice of either profession separately ; that the Chemists-Dentists are—as a class—quite equal in both moral character and social status to those who practise pure dentistry, and that if scientific training and attainments are to be brought into account the former class need have no cause to fear the comparison.

Your obedient servant,

SUUM CUIQUE.

Manchester. Oct. 10, 1885.

British Journal of Dental Science.

No. 428. LONDON, NOV. 15, 1885. VOL. XXVIII.

THE PRACTICE OF ARTIFICIAL ANÆSTHESIA LOCAL AND GENERAL,

WITH SPECIAL REFERENCE TO THE MODES OF PRODUCTION,
AND THEIR PHYSIOLOGICAL SIGNIFICANCE.

By DUDLEY W. BUXTON, M.D., B.S., M.R.C.P.,
Administrator of Anæsthetics at University College Hospital,
and at the Hospital for Women, Soho Square.
(*Concluded from page 985.*)

In numerous experiments, with which I will not detain you, it has been shown that when the nervous centres are protected, narcosis or anæsthesia is not produced; but that, when the muscles and nerves are similarly treated, while the centres are exposed to anæsthetic vapours, anæsthesia obtains. But, as I shall point out in a moment, chloroform has various ways in which it affects the nervous system. These, for convenience, we will call the direct and the reflex. By the direct, I mean when chloroform is conveyed by the blood-stream to the cerebro-spinal tissues, and produces gradual extinction of the activity of the centres therein found. The reflex action of the chloroform is that action which I believe chloroform to be able to exert upon the peripheral terminations of the vagi, giving rise to cardiac inhibition and sudden death.

Speaking of this reflex action of chloroform, I am anxious that we clearly should separate the cases of pure syncope, due to fright, to shock—as when operations are commenced before adequate anæsthesia has been attained—from those which result directly from the action of chloroform. Let us con-

sider the last cases first. The mechanism of such deaths is, I think, clearly enough proved to be as follows:—

The patient has presented to him an atmosphere impregnated with chloroform, up to a high percentage value. This atmosphere acts as a powerful irritant on the naso-pharyngeal and laryngeal areas, and produces a reflex inhibition alike of respiration and of cardiac rhythm. The patient seems to hold his breath for an instant, and then grows pallid. At this moment his pulse will have ceased, respiration will be in abeyance. In support of this view, I would bring the following facts to your notice. The Committee appointed by the Royal Medical and Chirurgical Society of London, state that, when chloroform was given to dogs, as to the human being, the breathing was often arrested as if by spasm.

Professor Rutherford (*Journal of Anatomy and Physiology*, vol. iii) has also shown that, when a rabbit is exposed to an atmosphere in which is diffused an irritant vapour, it stops breathing; subsequently the heart ceases to beat, and the rabbit expires. Rutherford explains these results as follows: he believes that the fibres of the inferior laryngeal nerves are induced to inhibit the action of the heart. In cases in which a preliminary division of the vagi had been performed, this stoppage of respiration did not occur, and of course the heart remained beating. Dr. Richardson found that quite the same phenomena showed themselves when chloroform was the irritant employed. I may also refer to the Research Committee of the British Medical Association on this point. In their fourth Report (BRITISH MEDICAL JOURNAL, December 18th, 1880), they describe a sudden fall of blood-pressure following administration of a heavily laden chloroform atmosphere, while, on withdrawing the anæsthetic, recovery took place, and they add, "This occurrence followed so uniformly upon certain stages of chloroform-narcosis, upon every approximation of the sponge containing the agent, even for a few seconds, to the animals muzzle, that it was regarded as probably reflex."

But although these facts will, I submit, go far to explain the rationale of these melancholy cases of death when "only a whiff of chloroform" had been administered, we must bear in

mind that deaths resulting, I think, from chloroform-irritation occur at a somewhat later period ; namely, within the first minute or two—certainly during the interregnum between volitional and unconscious life. Such deaths are far more common than are those of the preceding class. Dr. Brown-Séquard says, "It is by reflex influence due to the sudden irritation of the branches of the par vagum in the lungs, that chloroform has killed in the very rare cases in which the heart's action has been stopped before the respiration." Brown-Séquard proves that no sudden syncope could be induced in dogs after he had divided the vagi. He ascertained also that he could produce quite the same effect by galvanising the medulla oblongata, or the pneumogastric. In this way we see that chloroform-vapour produces death (1) by reflex inhibition of respiration, (2) by reflex inhibition of the heart ; in the one case it is probable that the inferior laryngeal nerve (see Rutherford, *op. cit.* ; also Rosenthal, *Automat. Nerven-Centra*, 1875), in the other, the pulmonary fibres of the vagus, are the efferent channels whereby the medulla and cardiac ganglia are acted upon.

Granting that these cases of fatal syncope owe their origin to chloroform, and I think we can hardly avoid such an admission, we discover that this agent transgresses one of the canons laid down as to the essentials of an ideal anæsthetic. In a certain number of cases, it invades areas other than sensory, and at a period when the sensory tracts are themselves still in function. Cannot we, however, lessen this evil ? Is it not possible by a careful and skilled diagnosis to select such cases, and avoid giving them chloroform ? Or, again, may we not so administer our chloroform as to obviate all possible risk of reflex syncope through stimulation of the vagal endings ? I will not weary you with statistics, but will give you the result of careful observations and comparisons, which have led me to the conclusion that we cannot ever foretell such casualties. Those persons who seem most robust succumb, while the debilitated and feeble survive chloroform, narcosis. With, perhaps, the exception of persons possessed of a fatty heart, or those habitually liable to syncope, I think one would not be able in any manner to select cases which

would *per se* be suitable or unsuitable for chloroform, or would give one either an inward assurance that the administration would be safe, or the converse.

But when we come upon the subject of the methods of administration, I apprehend we have a more hopeful answer to record. The danger of reflex syncope arises from a sudden irruption into the lungs of concentrated vapour ; and hence, I submit, any method which employs a large volume of chloroform, or prevents thorough and great dilution, adds to the danger. The method which Mr. Clover habitually employed effectually obviated overdosage ; and so, whatever may be the drawbacks urged against it, it certainly affords a sure and valuable means of avoiding such untoward accidents. However, we have yet to seek how far chloroform confines its action to sensory or harmless areas, when the patient, having passed through the first or syncopal danger, has entered upon the true anæsthetic stage. And here I would be permitted to enter a protest against attaching the blame to chloroform in many cases when, the patient having been rendered unconscious while yet some reflexes persist, the operation is commenced. It happens only too often that "the shock" in even trifling operations—*e. g.*, circumcision, or that for paraphimosis, or the extraction of a tooth, occasions death. These deaths are to be explained (Dr. Lauder Brunton, *Pharmacology and Therapeutics*, p. 174) by remembering that, the vaso-motor centre being lulled to sleep before the vagal centre is affected, the tendency to syncope is not in this case, as in the sentient being, prevented by a reflex constriction of the arterioles.

It is notorious among those who have employed chloroform at all largely, that even among individuals there is marked difference in the dose required to obtain an anæsthetic condition. When operations on the different parts of the body are undertaken, far deeper narcosis for safety is required in some than in others ; for instance, excision of the eyeball, and operations about the genital organs. If we be content with a light narcosis in such cases, we subject our patients to grave danger.

Now, returning to the order of the advance of chloroform-

narcosis : there is gradual loss of voluntary movement, the reflexes disappear one by one, all the intellectual centres are blocked, and the subject under anæsthesia is simply *living i. e.*, has only just so much nervous action as will maintain in due working order the vital requirements of the organism. These vital requirements are readily grouped under two classes : circulation, for which we need a healthy heart-muscle, a due correlation between it and its nervous mechanism, a certain maintenance of blood-pressure and respiration, for which is required the function of the respiratory centre, and correlation between it and the mere mechanical actions involved in respiration.

Chloroform, as was shown by Dr. Glover (*Edinburgh Medical Journal*, 1842) can affect the heart-muscle itself, although large doses are needed to obtain such a result, at all events in the case of healthy heart-muscle. Ringer (*Practitioner* vol. xxiv), who compared the effect upon the heart-muscle of frogs when using chloroform, ether, or ethidene-bichloride, found that chloroform possessed the power of rapidly knocking down the heart, causing it at first to beat more and more feebly, until at length it was alike incapable of beating spontaneously, or yet of responding to excitation. The muscular irritability persists longer after death from ether than after fatal chloroform-narcosis. Dr. Richardson (*Medical Times and Gazette*, 1867, vol. ii, p. 481), who instituted careful experiments upon this, showed that the irritability appeared to persist longer, the smaller the equivalent of chlorine in the molecule ; and Wood (*Therapeutics*, p. 217) points out that vermicular movements persist after death from ether. Hence, anticipating a point we shall have to again broach, we may say that chloroform is certainly inimical to protoplasm at the least in a higher degree than is ether.

The action of chloroform upon circulation and respiration was shown by Snow to depend upon the strength of the atmosphere used. Clover, following up the teaching of Dr. Snow (*Proceedings of the Odontological Society*, March, 1868), advances that, if a vapour of over the strength of five per cent. chloroform vapour in air be employed, it caused stoppage of the heart before cessation of respiration ; when he worked

with a lower percentage vapour, the heart beat for a considerable time after respiration had ceased. Mr. Clover, in making these statements hazards the view that the human heart is probably more liable to chloroform poisoning than is that of the lower animals.

In profound narcosis, the heart-rate slows (Committee of Royal Medical and Chirurgical Society, *Transactions*, vol. xlvii), a fact too well known to need my repeating, the results of the numerous observers who have experimentally shown its truth. Dogiel, a most careful observer, believes that this slowing is constant, and the result of irritation of the pulmonary terminations of the vagi by the chloroform-laden blood. When preliminary section of the vagi is performed, the slowing does not, he asserts, take place. But, following upon this slowing, there is a lowering of arterial pressure (Committee of Royal Medical and Chirurgical Society, *Transactions*, vol. xiii, and Grants Committee of British Medical Association, *British Medical Journal*, 1879).

The importance of these facts cannot easily be overestimated. They reveal that the heart is, so far, working under a disadvantage, and hence will be less able to recover should danger arise from the breathing. Such conditions of the circulation, are, I think, strong presumptive evidence against chloroform as an ideal anæsthetic. We are seeking simple loss of sensibility, and we find that the agent employed attacks the vital centres. The respirations, after an initial retardation, are found to become more shallow; their rhythm may be increased, but, whether or not, there is lessening of amplitude and depth, and at length respiratory movements cease. It has been shown (Sir Joseph Lister, in Holmes' *System of Surgery*, third edition) that movements of the trunk, wholly ineffectual as far as respirations are concerned, often persist after respiration proper has ceased, and there is danger lest these should be mistaken by the inexperienced for true respiratory movements. Consecutive upon the cessation of respiration, we find that the pulse weakens and intermits, the heart eventually stopping. It has been found that the deoxidated blood collects in the right

auricle and ventricle ; the heart's power, as I have shown, being already lessened by the action of chloroform, now ceases, the muscles being unable to put forth an increased effort in response to the increased call upon it.

None will deny that such deaths of this kind occur ; about the exact etiology we cannot be so sure. Is it for us to enquire why does death occur in this way ? Snow, Clover and others, have taught that in percentage dosage we find the answer to our question. Given, say they, a dose less than four parts of chloroform-vapour in 100 of air, and you are safe ; increase that percentage, and danger impends. Paul Bert (*Comptes Rendus*, November, 1881), on the other hand, proposes to recognise three zones ; one, when a chloroform-atmosphere is too dilute to promote anæsthesia ; a second, in which the vapour produces anæsthesia and never kills ; and a third zone, when the chloroform-vapour percentage is always lethal. Dr. Richardson (*On Death from Chloroform*, *Med. Times and Gazette*, 1870) does not recognise the validity of the percentage doctrine, leaning rather to the view that the chloroform tends to accumulate in the blood, and so exerts at first a deleterious, at last a fatal effect, paralysing the sensory motor areas, at length, the sympathetic ganglia and medullary centres. In each person, it would seem to him, there exists a certain resistive power to chloroform ; and in those in whom this is least, fatal issues occur, their vital centres being early invaded, and being unable to resist an influence practically inoperative in other cases.

Whether such views do more than "dimly figure out a distant truth," I cannot pretend to say ; the proofs appear unsatisfactory in some particulars. However, there seems to me no doubt at all that chloroform is a powerful protoplasmic poison, and as such its use must be fraught with danger. That chloroform is much maligned, I believe ; but I venture to think that the dread of it is wholesome. Another point telling against chloroform as an ideal anæsthetic is that it depresses the bodily temperature, and so conduces to promote the effect of shock, a point which Dumeril et Demarquay have distinctly proved.

We have yet to consider whether any other agent fulfils the canons requisite for the ideal anæsthetic.

Ether, now widely used, may be taken first. Ether if properly administered, will produce profound anæsthesia more rapidly than chloroform*. Ether has been accused (1) of killing patients by asphyxiation from spasm of the glottis; (2) of killing by provoking pulmonary mischief, bronchitis, pneumonia, etc.; (3) of paralysing the respiratory movements; (4) of inducing syncope. Syncope does certainly occur during ether administration, although very rarely. Gosselin (*Clin. Chirurgicale de la Charité*) cites a case which occurred where an attempted reduction of a dislocated thigh was proceeding. Amidon (*New York Medical Record*), in describing the condition, believes he has succeeded in avoiding the danger by injecting small doses of atropin. One or two cases have since been recorded (*BRITISH MEDICAL JOURNAL*, 1878, vol. ii p. 602). It is probably doubtful whether these cases are due to ether inhalation, as we shall see the heart is practically uninfluenced for evil by ether. Ringer has shown how hardly ether will affect the heart-muscle of frogs; and Wood, after noting the same fact, mentions that, when it is injected into the veins of animals, the heart's action remains uninfluenced. While it is easily demonstrable that, when the mammalian heart, is watched, artificial respiration being maintained, it will be found practically unaffected by the most enormous doses of ether. When death does occur from cessation of respiration, the heart beats for a considerable time. Moreover, the heart-muscle being intact, it readily resumes its functions when artificial respiration is performed. The action of ether upon the vaso-motor system has been carefully worked out. Arterial pressure is always increased in ether-narcosis.†

* It may, perhaps, be well to emphasize this point, since during the discussion which followed upon these remarks several speakers expressed surprise at this statement, stating they had failed to effect speedy narcosis when using ether. I may then say that an average taken after employing ether very frequently indeed, alike at hospitals and in my private practice, I have found two to three minutes ample time to get my patients profoundly under the influence of the anæsthetic.

† Chloroform Committee, Royal Medical and Chirurgical Society. Scientific Grants Committee, British Medical Association, Anstie *Stimulants Narcotics*, Samson on *Chloroform*. Bowditch and Minot (*Boston Medical and Surgical Journal* 1884; quoted by Wood).

The death from spasmodic closure of the glottis is so rare as practically to be unimportant, save as a means of pointing a moral ; for such cases are certainly due to the administration of too powerful a blast of ether to a timid patient. He holds his breath as long as nature permits him ; and then, with an attempt at a deep drawn inspiration, inhales a supersaturated ether-atmosphere. The delicate mucous membrane rebels, and so arises the spasm. Even in such cases, admission of air and pressure on the chest will set matters right. Such accidents, I think, rarely, if ever, occur when Clover's inhaler is employed by one accustomed to its use.

Death from chilling of the pulmonary mucous membrane, giving rise to pneumonia, or, through the direct irritation by the pungent ether-vapour, causing tracheitis and bronchitis, does in a certain number of cases occur. Sédillot (Péan, Clinique Chirurgicale à l'Hôpital St. Louis, 1882, *De l'Anæsthésie Chirurgicale*, 1882) found experimentally, that dogs got pneumonia when ether was introduced through an opening in the trachea. Mr. Lawson Tait (*Practitioner*, March 1876), recognising this danger, invented an apparatus for preventing cold air from entering the lungs. That there is a considerable danger of these occurrences in the case of young and delicate children, I am pretty certain ; and I should be glad to learn the experiences of others on this subject.

We now have to deal with the last and most important danger—invasion of the medullary centre and stoppage of respiration. Ether, then, falls short of the ideal as an anæsthetic, in so far as it travels beyond merely annulling sensation, and attacks vital centres. However, considering the great volatility of ether, and that the advent of apnœa is heralded by marked signs, while the heart remains in active function even after apnœa, we have, I submit, a far less alarming symptom with which to deal than in the case of chloroform apnœa.

Among the anæsthetic agents belonging to this group, but few, save chloroform and ether, are widely known or largely employed. Methylene, or bichloride of methylene, ethidene, and amylene, have been received with some favour.

Methylene was carefully studied by Dr. Richardson, who gave it a very high commendation. His views were early called in question by Nussbaum in Germany, and Tourdes and Hept and Péan in France, while Sir Spencer Wells took up the cudgels in defence in this country. Subsequently, several deaths occurring, the belief in this agent became shaken. It was further objected by the Anæsthetic Committee of the British Medical Association that the methylene was probably not a simple body. Two years ago MM. Regnauld et Villejean (*Journ. de Pharm. et de Chim.*, 1883) undertook a research which has recently been completed, and which led them to the following results: that the commercial methylene, obtained through agents accredited by Sir Spencer Wells, and therefore genuine, was a mechanical mixture composed of four parts of chloroform and one of methylic alcohol. Their proofs I cannot detail. They next investigated true methylene bichloride—that is, methene bichloride—a substance very difficult to prepare pure, and very costly. In some comparative experiments, they administered the two agents, finding that, while the commercial agent behaved precisely like chloroform, the genuine methene bichloride produced choreiform and epileptiform convulsions. Unless any flaw can be shown in the work of these gentlemen, methylene cannot, I take it, be accredited with any virtues greater than belong to the long known mixtures of chloroform and alcohol. Obviously, no further discussion on my part is needed.

Ethidene and amylene have, unfortunately, been discredited, as deaths have occurred during their use. Those attributed to amylene are, according to M. Péan, attributable to causes other than the agent employed; and the same may well be said of several, notably the one recorded by Mr. Clover (*BRITISH MEDICAL JOURNAL*, 1878), with regard to the fatalities of ethidene. The behaviour of the group before us reveals, in a striking degree, the working of laws which connect their behaviour towards the organism with the molecular weight of the agent. Thus, Dr. Richardson, comparing a number of them, says: "There appears to be reason for the belief that the lethal energy of an anæsthetic

is clearly related to the molecular weight of the substance, increasing directly as its weight increases." However, in summing up the case of the various members of the carbon-series in which chlorine occurs, I think we must admit that, as far as the evidence is now before us, they are all dangerous anæsthetics. But we must remember that the danger of which I speak must, in some cases, be a necessity; and, as a practical anæsthetist myself, I should not hesitate in many conditions to administer chloroform, or a congener, rather than ether.

The thoroughgoing advocates of ether will tell you that ether can and should be administered in all cases, or, practically all cases. They would commend rectal etherisation when faucial etherisation was impracticable. The practice I deem too dangerous for general use, but we must consider it as a possibility.

Turning, however, from the broad issue as to which agent among the general anæsthetics is the safest, we must answer the question—May not a truly local medication be effectual in promoting an absolute anæsthesia?

Time will not allow me to enter upon the subject; it alone remains for me to ask you to consider how far a local ether spray, the use of rhigolene, or the employment of cocaine, will fulfil the duties of the ideal anæsthetic. I should, from my experience of the former two methods, relegate their use to the most trifling operations of minor surgery, as their powers of promoting anæsthesia are very small, very limited, and very transitory; while, at least with ether-spray, its use is attended with inconvenience to patient and operator.

Of cocaine I will say little; there are others here, far more competent than I am to expound its uses and extol its merits; I will only say that cocaine has probably achieved a position from which it will be hard to oust it. It does not appear to have answered in every case, and its range of usefulness must, of necessity, be restricted within narrow limits.

In summing up, then, I would venture to ask for a careful consideration of the physiological bearings of the question before us; let us take, step by step, the evidence and weigh

it in the balance of experience ; let us dispassionately judge between the substances under review ; and having arrived at some decision, let us then inquire into the best methods whereby the selected substance can be most advantageously administered. In conclusion I would remind the Section that I have been, on this occasion, able only to compare the physiological actions of ether and chloroform, so that I must reserve to myself to resume the inquiry into the physiological behaviour of other substances used for producing anæsthesia, upon another occasion.

EXCISION *VERSUS* EXTRACTION.

BY C. SPENCE BATE, F.R.S., Plymouth.*

AT a time when surgery is conservative in its treatment, and the greatest efforts are being made to retain parts that are only of secondary value, it is remarkable that in dental surgery the instruments available for the forcible removal of a tooth from its natural position, have of late years so largely increased.

That many of these are intended to expedite the operation and lessen the pain, is without doubt true, but it also surely evidences a foregone conclusion, that an operation being convenient is more likely to be determined upon.

It is now some fifty years since a Mr. Fay, of Liverpool, introduced into his practice the mode of excision of the teeth, in order to obviate the pain of extraction, but as his mode of treatment was, after the operation, to allow the roots of the teeth to take care of themselves, it was found that he had to remove a large number of the retained stumps for the purpose of getting rid of abscesses, gum boils, &c. ; circumstances that induced him to return to the more common mode of practice, and extract the teeth bodily, rather than allow a portion to remain at the risk of future trouble and a second operation.

I have given this account of Mr. Fay's practice, not from any knowledge of my own, but from what I have heard when I was younger ; but it should be taken into consideration that

* Read at the Annual General Meeting of the Association, at Cambridge.

when Mr. Fay experimented on excision, the power of conserving the remaining stumps was not within the bounds of practical surgery as it has since become.

Long before Mr. Fay attempted the excision of the teeth that are situated in the posterior portion of the jaws, it was carried out and is still continued in relation to the teeth with simple roots, which are largely retained for the purpose of supplying the loss of their crown with an artificial substitute.

If the operation be desirable and capable of being effectively pursued in the anterior portion of the mouth, there is no reason why it cannot be as successfully fulfilled at the posterior, the only reason as far as I can see is that our patients generally are in accordance with us in our practice in the former case, but are largely antagonistic in the latter, which coincides with the more convenient and easier mode of preparing the jaws for the reception of substitutes than that which entails a prolonged demand on our time in the necessary treatment that the stumps may require. Another apparently satisfactory reason for the removal of the stumps, is the self-satisfying argument, that when they are taken out, "they are certain not to pain again," but there are other effects which an extensive series of extractions will produce, that I think are of greater permanent evil than the risk of local disturbance that may follow the retention of an unsuccessfully treated stump or series of roots.

The amount of absorption that follows the loss of a tooth by extraction is very considerable, and when a large number are removed at the same time, the waste of osseous tissue is in a much greater ratio than in relation to the same number of teeth when extracted at various times. Nor is this the worst, for sometimes the waste goes on year after year, to certainly a less extent than at first, but so continuously that in some cases the tuberosity for the attachment of the lingual frenum may be seen conspicuously elevated as a prominent spine. Nor is this conspicuous waste of bone the worst possible feature, for in some instances the shock which the system receives is so great that it is sometimes long in its recovery. One such case has been brought to my

notice within the last twelve months that terribly elucidates my meaning.

I learned from the patient herself that she had consulted me a year or so previously relative to her mouth, and that I had advised her to have no teeth removed but some eight or nine substitutes inserted. She was then probably on a tour of professional interviews, and ultimately appears to have fixed on one who would do for her the largest amount of work for the smallest amount of payment. The result was that she had every tooth but two second lower molars extracted, and when I saw her again the alveolar ridge was wasted to a small and narrow line round the jaw, and she was wearing an imperfectly-fitting set of teeth, arising from the large amount of absorption that had gone on since the substitutes had been inserted.

One prevailing idea the patient had was that he who had extracted her teeth had ruined her for life, that he had deformed her in face and body, that she was fast becoming an unsightly person. To quote one of several letters that I received from her, soon after I had placed in her mouth another set. She writes:—

“I do not wish to trouble you with any correspondence, but I think my case needs an apology—I am grievously disappointed in the results. When I told you that I wished to be bigger, I was so pent up in the body that I could not understand for what cause I had been so treated and had so suffered.

“Now I find I am getting very stout every way, and that which had been brought almost to a climax, and which would have been very beneficial to me has all dispersed, and in order to make me stouter I find my body and face are distorted. My nose is still waving to and fro, which I suppose is acting on my spine and causing it to be knotted and crooked.

“My face is all on one side, as is also my body.

“I am almost afraid to wear my teeth, the vulcanite is expanding so, and I feel that with what is going on in my mouth I am further away from having my desires realised.”

The writing of one such letter as the above would be suggestive of an exhibition of feeling arising from some annoyance connected more or less immediately with the distress induced by the novel sensation of wearing an extensive set of substitutes for the first time. But when such letters are repeated and continued for a considerable period, when, added to this, the existence of the patient has become a burden to herself and friends, that medical treatment has had no power to remove the melancholy, that she has been compelled to have an attendant in constant association with her, I think we are forced to attribute this distressing monomania as the consequence of the removal of a large number of teeth and the great immediate personal change which a considerable amount of alveolar absorption induces.

Conservative dentistry is, I believe, the better surgery, and where the roots of teeth are retained in a healthy condition, the mouth is preserved in a higher degree of efficiency, both for personal appearance, ease, and comfort, as well as for the satisfactory application of artificial substitutes.

Unfortunately it has been too common a practice for the stumps that are left in the mouth, being either the remains of decayed teeth or others that have been excised to admit of their replacement by substitutes, to be allowed to shift for themselves. The natural channel of the dental pulp is allowed to exist either as an open chamber to be occupied with oral deposits, or to retain the slough of the dental pulp and so pave the way to future periostitis and alveolar abscess.

Nor is the dentist wholly responsible for this condition of things, inasmuch as the general anxiety of the patient is not that the mouth shall be placed in a thoroughly healthy condition, but that the greatest amount of show shall be made for the least amount of personal inconvenience. Consequently all things like decayed stumps are allowed to take their chance, and a pus-discharging gumboil is looked upon as a valued safety valve against active pain.

It is not my intention to raise an indiscriminate determination that no tooth or stump should ever be extracted, but I do think that neither stump nor tooth should be removed

that is healthily implanted in its alveolus or could be made so. Roots that are loose, roots that are inducing induration of the periodontium, roots that are the exciting causes of a chronic inflammatory condition of the gums, or are distantly connected with obscure pains of the head and various parts of the system ; teeth that are inducing irregularities in the mouths of the young, particularly when they exhibit symptoms of a rapid and overmastering decay, are such as will need the skilful application of the numerous well-made forceps, and even take the power of diagnosing when and what teeth should be retained or extracted out of the category of empirical rules.

Frequently, however, we are not consulted, and a person will rush into our operating-room and demand the immediate extraction of a fairly good organ simply because it pains. Likely as not they will pitch upon the wrong tooth, and a contest arises between the patient and his dentist as to what is right to be done, and in this, as everything else, it will be found that the stronger will prevail, for, to use the words of a patient for whom I declined to remove a sound tooth that was condemned by its owner, "The person who feels the pain is the best judge as to which tooth to refer it."

Undoubtedly there are many cases where the pain is so intense that to the mind of the sufferer the only relief is the extraction of the tooth, but in the present time with the power in our hands of devitalising the pulp, in a large majority of cases, perhaps in all but under exceptional circumstances, more permanent and immediate relief can be given than by extraction. For assuming the worse condition of local aggravation, the pulp being destroyed, the surrounding tissues become rapidly amenable to treatment. The tooth, ceasing to pain, can readily have the pulp-cavity and roots emptied of the remaining slough, the chamber and canals being permanently plugged, and the useless walls reduced by excision to a level with the surrounding tissues.

The treatment of the anterior or single-rooted teeth, in consequence of their importance in restoring the natural appearance so perfectly, through the means of pivoted crowns, has long been under successful control.

The excision of one of these teeth when taken above the pulp chamber is comparatively a painless operation, in many cases the entire pulp coming away with the amputated portion; the root on being plugged either with the pivot of the newly adapted crown, or by means of any water-tight plug, becomes a restoration of the parts more natural and more permanently normal than can be produced by extraction under the most favourable circumstances.

That which has been done so frequently and so successfully for the teeth with a single pulp canal is also capable of being done with teeth of a larger number of both roots and canals. Undoubtedly the molars are larger and stronger organs, and the excision of their crown, if tolerably firm, might require a greater hand power than every dentist possesses; for the slightest deviation from rigid firmness and steadiness of hand is liable to dislocate the tooth in its socket, to give intense pain, and an after irritation that not only may require a prolonged treatment, but probably vitiate the success of the operation altogether.

The compound character of the pulps of the posterior teeth in another source of difficulty, for it is scarcely probable that the excising power shall be so equally distributed, that the branches of the pulp which traverse the different roots shall be simultaneously severed; consequently the force that ruptures the pulp of the anterior root of a molar tooth may only stretch that of the posterior, which being done for the smallest amount of calculable time must induce exquisite pain.

It appears to me, therefore, that the devitalisation of the pulp previously to the removal of the crown is a thing to be desired, and the excision should be by a series of cuts, rather than by a single operation.

The roots of the excised tooth being clean and healthy, the pulp chamber and canals being carefully and hermetically sealed, the alveolar processes of the jaws are preserved and the mouth is retained in a condition more in accordance with its natural appearance, and less liable to vary for a long series of years than when the teeth are entirely removed.

I am aware that many practitioners advocate this mode of practice as conscientiously as their patients will admit of their

doing ; but I think that it would largely advance the power of their advice and give increased confidence to their treatment if the subject received a full discussion by the profession, and it went forth as the dictum of this society, that the roots of teeth retained in a healthy condition is a thing to be desired, and that the preservation of the alveolar walls is synonymous with a youthful and healthy expression of the face.

GRATITUDE TO DR. HERBST.

By C. W. DUNN, L.D.S., Florence.

The method of Dr. Herbst of Bremen has, for some time, been before the profession. It has been discussed, it has been exhibited and criticised, condemned and extolled by various practitioners here in Europe and in the United States.

There is still some difference in opinion whether eventually it will prove to be as useful as some of its admirers hold it to be or whether after a little time it will pass away and be remembered as a craze which had its day.

I will not attempt to prophesy which will be the direction of the future choice of the profession, whether the future practitioners will fill teeth with the Herbst instruments or whether they will continue to pound and hammer and electrify and mallet them. There is however one thing which is desirable to recollect and that is that the man who thought of so ingenious a method and who imagined such ingenious forms of instruments, so as to enable him to accomplish that which he desired and above all, he who without any reserve, communicated to the profession, all that he could describe and show, deserves the thanks of the profession and a recognition of his services, good will and liberality, in communicating so openly what he thought would be a benefit to his colleagues, and having taking so much trouble and having gone to so much expense to prove and demonstrate its utility and practicability. Many a man, having found a great facility in rendering his work more sure and more easy, would have been careful to have kept the process to himself, or would have tried to have made money by it, by communicating it under many mysterious guises to others.

Dr. Herbst has acted altogether differently, he made his process known in the widest manner possible, the form and principle of his instruments were illustrated and published, he publicly demonstrated it himself in Europe his brother did the same in America. He let it be known which preparation of gold he considered to be the best and where it could be procured, and the manner in which he thought best to introduce it into the cavity of the tooth. In fact, in every way, as much as he could do, he did, and in most liberal and loyal manner possible without parade, or mystifications, or bombast.

Whatever may be the eventual fate of his process he evidently believed it was good and freely offered it to the profession. Surely some mark of recognition of our sense of obligation should be made to him. If noting else, let some of our journals register the feeling of those who are grateful.

A great many have experienced the exhaustion of filling complicated cavities with gold, how the back aches, and how the eyes and the head aches, and how on account of such frailties we have been tempted to scamp the work and to be satisfied with a poor result, and what a strong determination is necessary to spur our tired energy to go on and complete the case as we know it ought to be finished. One who has spent hours over filling and shaping the gold may well appreciate the ease with which the redundant gold is pressed in by the rotating instruments of Herbst. Now in a narrow space filling two teeth, the little needle was forced in between, open the space, drive the gold into the cavity, rub off the excess at the edge leaving it smooth and polished, that with an ease and rapidity that contrasts so favourably with the hand pressure, or the filling. I for one, acknowledge very gratefully my debt sense of obligation to Dr. Herbst, and have blessed him over and over again, for saving so much time, so much labour, and so much fatigue to both my patient and myself, and I think that there are many others who think as I do, and who, if unanimous in expressing their gratitude, would no doubt give pleasure and gratification to one who so well deserves them.

FARADISUI AS A CURE IN MIGRAINE, CHOREA
AND TINNITUS AURIUM.

WITH ILLUSTRATIVE CASES.

By JOSEPH ABBOTT, L.D.S.R.C.S.I., F.S.S. Lond., Exeter.

Although we may regard Electricity with some favour, mingled with astonishment, as a motor power in driving a dental mallet, yet I opine that those who are best acquainted with the claims of this truly wonderful agent in the cure of nervous disorders, can point to it with a greater degree of satisfaction, than when merely regarded in the light of an economiser of labour. If we give credence to the statements of Duchenne Althaus, Poore, De Watteville Tibbits, Stretch Dowse, Boynes, and others, few will deny upon trial that it is a remedy of intrinsic value and merit not to be placed upon one side with the hand wave of self and all-sufficient wisdom : but rather to have its worth or otherwise investigated ; weighed with reference to its effects ; and these effects finally recorded for the benefit of the profession present and future. Reject by all means what is false either in theory or practice but revel in the necessary research and application in order to prove your negations. Establish your premises upon the broad basis of your investigations, so as to enable you to promulgate a sound and authoritative judgment, for it is upon these lines and these only, that we may hope for success. For some years I have given a deal of attention to electricity and its application in the relief of neuralgias of all kinds, and the result has so far impressed me with its great utility that I never hesitate to rely upon it as a primary remedy in these cases. As a reward for the trouble I have undergone in giving my experience it is gratifying to discover that I have cured or very materially relieved four fifths of the cases to which I have directed my energies. Out of the numerous, varied, and peculiar records in my note book, I have selected three as being most likely to convince a lover of his profession, as well as the sceptical, of the absolute necessity of grasping anything and everything which is or can be proved of service in the cure of suffering humanity. The cases

under description scarcely come within the scope of a dental surgeon's practice, but as the sufferers were all hospital patients, the alleviation of whose ills was pronounced hopeless, after great pressure upon the part of these poor people, I undertook the task of *trying* to do what I could without any prognostication on my part of a successful result or otherwise.

T. S., a smith, ætat 46, weight 161 lbs., swarthy countenance, and muscular build, was sent to me October 2nd, 1884. His appearance and method of behaviour at once attracted attention, and to say the least of it was most peculiar; inasmuch as his head was not set perpendicular to his shoulders, but assumed an inclination forwards to the thorax. In the attempt to raise his head or look upwards he experienced a frightful paroxysm of pain, which caused him to clap both hands to his head and moan piteously. The eyes were dull and expressionless, and there was considerable expansion of the frontal bone, extending upwards from the edge of the orbital plate. His articulation was defective, as he spoke in a tone commonly known and designated by the term "thick" as if he had a piece of pudding in his mouth. When he did give utterance—which was seldom—it was in a sharp spasmodic sort of manner impressing the listener at once with the idea that a prolonged conversation was not desired. He volunteered the following statement. His father and mother were strong healthy people (well up in years, the latter suffered much, however, from periodic headache, his brother had a few fits when young of an epileptiform nature, but was now apparently a strong man in good health. As to himself he was a great smoker and had been a hard spirit drinker when he resided in Birmingham some years before, and as a consequence his club doctor informed him his liver was much congested. He suffered much from colic and flatulence at times and severe frontal headache. He ascribed all his misery however, to the following incident. One very hot day in summer, being greatly overheated, he ran from the forge, where he was working, and suddenly divesting himself of his clothes plunged into the river close by. Nothing occurred as the result of this foolish act, until the evening of the second day, when a sudden pain seized him in the left temporal region, described as if "a bolt shot through his

head," his limbs shook for a moment or two, and he vomited two or three times. Since then and up to the time of seeing me he had suffered a persistent pain, at times so terribly severe, that sleep was denied him night after night. He lost forty-six pounds in weight in six months, and consulted many medical men, but eventually was obliged to give up his work and become an inmate of the Deourt Exeter Hospital for ten months and subsequently an out-patient for six months, during which time he declared he swallowed as much physic as "he could swim in." He was slightly better for some little time but all his worst symptoms were re-appearing and he could not sleep owing to persistent pain. After some remonstrance and hesitation I took up his case and there and then administered a weak Faradic current for thirty minutes from a twenty-four cell battery, (The New York Galvano-Faradic Co's. Manufacture,) applying the positive reophore to the epigastrium and the negative reophore to the *nucha cervicis*. Emetemesis occurred *that* night, but he slept fairly well and pain was lessened but only in a small degree. For seven weeks I persevered in this course of treatment with this exception, that after the first week, I administered upon alternate nights the interrupted current from a Spomer battery to both mastoid processes, also to the motor point of the facial nerve situated in front of the ear, and I had the supreme satisfaction of marking a gradual diminution in the poor fellows agony day by day, and week by week until pain entirely ceased. I have waited twelve months before recording this case. I saw the man last week, he has suffered no relapse and stated that since I saw him he has experienced a new existence, principally owing to the expansion of bone over the orbit. This case was diagnosed first as "tumour of the brain" and was afterwards treated as "neuralgia of the Trigemini. The gradual reduction of the expansion, soon dissipated the former theory. My humble opinion is it commenced with gastric disorder which with the previous known state of the liver, the family history, and the exciting cause, *i.e.* the plunge in the river, stamps this case as one of true Migrane all the symptoms of which were present, the inertia, the meaningless, dull, apathic eye, and incoherency of

speech. One thing, however, is certain with respect to this case, that from the first moment Electricity was tried a gradually increasing improvement took place, and an ultimate recovery was established.

CASE 2.—CHOREA, ASSOCIATED WITH SCOLIOSIS.

B.Y., ætat 17, an anæmic overgrown girl, with one shoulder higher than the other, and lateral spinal curvature in dorsal region, involuntary twichings in right arm and right leg, also spasmodic action of the facial muscles drawing the face upon one side from the angle of the lip to the eye. Catamenia irregular three-and-a-half years, and for four months totally suppressed. Spinal distortion set in at age of puberty. Was wearing a badly fitting appliance the pressure of which exerted itself *one inch below* the crigin of the arc, this was immediately remedied by the fitting of a new appliance which exerted a gradually increasing pressure upon the arc along its entire length. Faradism was daily applied to the sacrum and pubic region, with the result that in five days the uterine function was restored. Afterwards the interrupted current from a Spomer battery was used daily for fourteen weeks, applied to the spinal column, facial muscles, muscles of the forearm, arm and hand; it checked all involuntary action of the muscles and there has been no return for twelve months, the shoulder has resumed its normal position in respect to its opposite one, and the curvature would scarcely be noticed by an ordinary observer, so great has been its reduction.

CASE 3.—TINNITUS AURIUM.

E.Y., ætat 46, had suffered many years from dyspepsia, dizziness, and darting pains through the head, her vision lately had become impaired and she was slighty deaf in one ear, occasionally in this particular ear (the left) she experienced a very annoying sensation which she compared to the sudden bursting of a small bladder followed by the treckling of a few drops of water. No moisture in the ear was to be seen how-
•over. She had been treated with purgatives bromide of potassium valerian and strychnine and syringing with no relief. The Faradic current applied for six weeks on alternate days with

the continuous voltaic to the spine and mastoid processes effected a complete cure.

ANOTHER CASE.

H.T., a youth 19, nervous temperament, frightened appearance, and a great coward—as his mother informed me he was afraid to stay within house at night from fear—complained of headache and a sound in his ears as if the wind was flapping against a bit of parchment, sallow, dirty complexion, yellow under eyes, furred tongue and foul taste in the mouth. Here the liver was evidently the exciting cause of the trouble, *strong* interrupted current to epigastrium, positive reophore over liver—with Faradic current on alternate days to mastoid processes. After the first application vomiting of bilious matter occurred. The seventh application was the last and completely removed the noises, and patient became quite cheerful, and went to his work with an amount of energy which surprised his friends. No relapse.

Reflections from the Surgery.

SUCCESSFUL EXTRACTION OF A DENTAL PLATE FROM THE ŒSOPHAGUS.

By T. SYMPSON, F.R.C.S.

Surgeon to the Lincoln County Hospital.

Reported from the JOURNAL OF THE BRITISH DENTAL ASSOCIATION.

ON February 3rd, 1885, at 10.30 p.m., I received an urgent message to visit E. R., a needle-woman, aged 31. I found her breathing stridulously, and with extreme difficulty, her countenance indicating great distress. She could only articulate in a hoarse whisper, and was constantly retching, and hawking up quantities of frothy fluid tinged with blood.

The history I obtained of the case was, that the patient was subject to epileptic fits, that upon recovering from one that evening, the persons with whom she lodged noticed that

she respired with difficulty, that she had lost her voice, and that she made signs of there being something wrong about her throat. They then discovered that a metal plate, containing artificial teeth, was absent from its usual position in her mouth.

By external examination, I detected a hard substance in the œsophagus, below and behind the larynx, and by digital investigation through the mouth, I was enabled just to touch one extremity of the plate with my forefinger. After several failures to seize the plate with throat-forceps, I placed the patient under the influence of chloroform, and then contrived to insert my finger-nail under one of the hooks. Thus I was enabled so to direct the forceps as to obtain a firm grip with them, when, by gently moving the foreign body, first from side to side, and then from below upwards and forwards, I succeeded in eventually extracting it.

The plate was composed of "dental alloy;" it measured one inch and a half by three-quarters of an inch, had five teeth fixed in it, and projecting from its extremities were five sharp hooks.

For a few days the throat remained so very sore that the patient was unable to swallow. She was consequently nourished by enemata of pancreatised milk; but within a week she took food by the mouth, and soon regained her usual state of health.

On my relating the case to the Dentist from whom the plate was procured, he expressed it as his opinion that the accident arose from the dental fasteners having lost their hold, through decay of those teeth they were intended to grasp.

REMARKS.—The difficulties met with in extraction arose from the violent struggles of the patient, spasm of the throat and larynx, and the impossibility of grasping the artificial palate, due to the ends of the forceps gliding over its convex surface. The anæsthetic rendered invaluable service by relieving spasm, and thus enabling the necessary manipulations to be conducted with comparative ease and comfort.

British Journal of Dental Science.

LONDON, NOVEMBER 15th, 1885.

THE INTERNATIONAL MEDICAL CONGRESS OF 1887.

We have repeatedly drawn our readers' attention to the progress made, both upon this side and the American side, in the direction of forming an effective arrangement for the holding of this Congress. As was pointed out, there was at one time a most hopeless state of affairs. Internal, we might almost say petty personal, interests were introduced, which were wholly foreign to a congress of scientists, which should, above everything, be cosmopolitan. The section devoted to Oral Surgery and Dentistry was, while these evil counsels prevailed, left out in the cold limbo of neglect. Dentists, we were shrewdly told, were not medical men (!) and so had no right to a place in the deliberations of those learned in the lore of medicine, or expert in the craft of surgery. However, happier and wiser counsels have now won the day, and the section in which our profession takes the most interest has been reinstated. The vast importance of the International Congresses cannot be justly appreciated unless by those who have carefully attended the meetings, and assiduously *set themselves to learn*. That America is to be the next meeting place will, unless we are much mistaken, prove of considerable importance to us dentists. The conflict between English and American dentistry is still keen; we on this side have yet much to learn, and we stand an excellent chance of gaining the needed information, if we avail ourselves of this opportunity of going across the Atlantic rollers. The assumption of the Presidential chair in the section devoted to oral surgery, by Dr. Taft, is matter of congratulation. The programme of that section has not at present reached us, but we have little doubt that it will be all it should be, and will afford everyone a chance of putting on record the results of his work and experience. The rules regulating the business of the Congress are fair, and open to only friendly criticism; we

append the more salient ones for the perusal of our readers.

To urge upon English dentists "to be up and doing," will, we hope, be a work of supererogation, but it seems that as a body, they are very modest and very retiring. This is a pity. A man owes it alike to himself and his profession and country to take some part, even if it be only that of a hearer, in all such international meetings. The Congress at Copenhagen can hardly be considered to have been a success as far as we are concerned. It is often and often deplored that we dentists do not get our desserts; we are ourselves to blame for this. The world is apt to accept a man at his own valuation or a few figures below that estimate, and so if we persistently hold our tongues and show no signs of intellectual life, while America is phlethoric with skilled dentists, who are likewise skilled workers, and not least important, skilled talkers, we must necessarily gain the character of being mere office drudges. The epithet will be said to show base ingratitude when there are so many leaders of men among us, who attend meetings, read papers, and teach the scientific side of our profession. It is not so, however, for if the names of the few who do thus distinguish themselves be scrutinised, they will be found to constitute a very minute minority of the possible number of men, who could, if they chose, do something to forward the profession, and add to its laurels. There is yet another motive, although a sordid one, which should induce English dentists to pay more heed to our advice. The more men show the world of what material they are made, the more will the world think of them, and learn to value at its due price the services of skilled and scientific dentists.

RULES.

1. The Congress shall consist of members of the regular profession of medicine, and of such other scientific men as the Executive Committee of the Congress may see fit to admit, who shall have inscribed their names on the register and shall have taken out their tickets of admission.

2. The dues for members of the Congress shall be ten dollars each for members residing in the United States.

There shall be no dues for members residing in foreign countries.

Each member of the Congress shall be entitled to receive a copy of the "Transactions" for 1887.

3. The Congress shall be divided as follows, into seventeen Sections :—

- I. General Medicine.
- II. General Surgery.
- III. Military and Naval Surgery.
- IV. Obstetrics.
- V. Gynæcology.
- VI. Therapeutics and Materia Medica.
- VII. Anatomy.
- VIII. Physiology.
- XI. Pathology.
- X. Diseases of Children.
- XI. Ophthalmology.
- XII. Otology and Laryngology.
- XIII. Dermatology and Syphilis.
- XIV. Public and International Hygiene.
- XV. Collective investigation, Nomenclature, Vital Statistics, and Climatology,
- XVI. Psychological Medicine and Diseases of the Nervous System.
- XVII. Dental and Oral Surgery.

4. The General Meetings of the Congress shall be for the transaction of business and for addresses and communications of general scientific interest.

5. Questions and topics that have been agreed upon for discussion in the Sections shall be introduced by members previously designated by the titular Officers of each Section. Members who shall have been appointed to open discussions shall present in advance statements of the conclusions which they have formed as a basis for debate.

6. Brief abstracts of papers to be read in the Sections shall be sent to the Secretaries of the proper Sections on or before April 30, 1887. These abstracts shall be treated as confidential communications, and shall not be published before the meeting of the Congress.

Papers relating to topics not included in the lists of subjects proposed by the Officers of the Sections may be accepted

after April 30, 1887 ; and any member wishing to introduce a topic not on the regular lists of subjects for discussion shall give notice of the same to the Secretary-General, at least twenty-one days before the opening of the Congress, and such notices shall be promptly transmitted by the Secretary-General to the Presidents of the proper Sections. The titular officers of each Section shall decide as to the acceptance of such proposed communications and the time for their presentation.

7. All formal addresses, scientific communications and papers presented, and scientific discussions held at the General Meetings of the Congress, shall be promptly given in writing to the Secretary-General ; and all papers presented and discussions held at the meetings of the Sections shall be promptly given in writing to the Secretaries of the proper sections.

No communication shall be received which has already been published, or read before a society.

The Executive Committee, after the final adjournment of the Congress, shall direct the editing and publication of its "Transactions," and shall have full power to publish the papers presented and the discussions held thereon, either in full, in part, or abstract, as in the judgment of the Committee may be deemed best.

8. The official languages of the Congress shall be English, French, and German.

In the meetings of the Sections, no member shall be allowed to speak for more than ten minutes, with the exception of the readers of papers and those who introduce subjects for discussion, who may each occupy twenty minutes.

9. The rules and programmes shall be published in English, French, and German.

Each paper and address shall be printed in the "Transactions" in the language in which it was presented, and preliminary abstracts of papers and addresses also shall be printed, each in the language in which it is to be delivered.

All discussion shall be printed in English.

PRESIDENTS OF THE SECTIONS.

- A. B. Arnold, M.D., General Medicine.
William T. Briggs, M.D., General Surgery.
Henry H. Smith, M.D., Military and Naval Surgery.
DeLaskie Miller, M.D., Obstetrics.
Robert Battey, M.D., Gynæcology.
F. H. Tirrell, M.D., Therapeutics and Materia Medica.
William H. Pancoast, M.D., Anatomy.
John C. Dalton, M.D., Physiology.
E. O. Shakespeare, M.D., Pathology.
J. Lewis Smith, M.D., Diseases of Children.
A. W. Calhoun, M.D., Ophthalmology.
S. J. Jones, M.D., Otology and Larynology.
A. R. Robinson, M.D., Dermatology and Syphilis.
Joseph Jones M.D., Public and International Hygiene.
Henry O. Marcy, M.D., Collective Investigation, Vital Statistics, and Climatology.
John P. Gray, M.D., LL.D., Psychological Medicine.
Jonathan Taft, M.D., Dental and Oral Surgery.
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THE EDINBURGH DENTAL HOSPITAL AND SCHOOL.—The Session 1885-86 commenced on November 2nd. The number of new entrants being eight. The total number on the roll at this date being eighteen.

GAULTHERIA AS A RESTORATIVE.—In the course of a curious and interesting lecture upon "Nervous Energy," Dr. Parsons, of Savannah, narrates his experience—novel to pharmacologists—of Gaultheria or Winter Green. A lady patient, who was very nervous, fainted during the extraction of a tooth. Dr. Parsons, mistaking the bottle, poured some Essence of Gaultheria upon her handkerchief, and found the inhalation at once restored the heart's action. This led him to devote some attention to the matter, and he found that a thorough inhalation of the essence effectually checked any inclination to syncope, even in subjects very prone to fainting. He also asserts Gaultheria acts equally well as a restorative when syncope has occurred.

TO PREPARE THE ESSENCE.—The best plan is to mix one ounce of the Oil of Gaultheria with a pint of alcohol. It is necessary to shake the mixture well before using it. The method Dr. Parsons recommends is that the patient breathes in through the nostrils the vapour of the essence so made, from a handkerchief or towel, and breathe out again from the mouth.

TO SWEETEN THE ATMOSPHERE.—Helenina, besides possessing a pleasant aromatic odour of its own, is reputed capable of keeping a room sweet and of effectually driving away insects. It is a cheap material, and if the accounts we have quoted are reliable, would seem likely to prove a very useful adjunct to the dental pharmacopœia. The dental atelier might by preference smell of Elecampane, than reek of carbolic acid, iodoform, or more odours which we refrain from naming.

A PAINLESS CAUSTIC is, says our contemporary the *Archives of Dentistry*, composed by adding a saturated solution of hydro-chlorate of cocaine to nitric acid.

Abstracts of British & Foreign Journals.

DENTAL COSMOS.

THE TREATMENT OF DEEP-SEATED ABSCESSSES WITHOUT EXTERNAL INCISIONS.

BY JOHN S. MARSHALL, M.D., Chicago, Ill.

By deep-seated abscesses, Dr. Marshall means those which have burrowed into the deep structures about the jaws, or have led to necrosis, or have penetrated the antrum of Highmore or escaped from the neighbourhood of the maxilla, and have burrowed downwards between the muscles of the neck, as frequently occurs in abscesses associated with the inferior teeth.

Ordinarily the diagnosis is not difficult, but occasionally it, is. Abscesses discharging into the antrum, or the nasal fossa

and producing offensive discharges, have been diagnosed as chronic catarrh. In one case an unerupted inferior wisdom tooth caused an abscess which discharging into the larynx, set up an irritative cough with expectoration of pus and mucus. This had been diagnosed as acute bronchitis. In other cases the abscesses have been set down as cervical glands enlargement, the result of scrofula.

In this paper Dr. Marshall treats of abscesses originating from disease of the inferior teeth.

The tendency of the suppurative products in these cases is downwards through the external wall of the alveolar process, and to point at the lower margin of the jaw ; but sometimes—especially with the molars—the abscess opens through the internal wall of the alveolar process, and burrows downwards between the muscles of the neck, and may discharge into the throat, or through the external tissues at various points from the submaxillary triangle to the superior border of the clavicle. The treatment is most important. It frequently consists in the removal of the cause by the extraction of the offending tooth.

In extreme cases of this deep-seated variety an incision is made through the external tissues at the lowest point of the abscess, for the purpose of drainage. Sometimes this is impossible, from the pus having burrowed deeply in several directions and having involved the dangerous vicinity of large vessels.

The surgeon, under such circumstances, has had no alternative but to wait, trusting that the abscess would find an opening for itself at less risk, before the patient should die of pyæmia. But Dr. Marshall suggests the extraction of the diseased tooth and the injection of peroxide of hydrogen into the sac.

This, he avers, prevents the abscess attaining the dangerous limits indicated above. Dentists have found it successful in the treatment of pulp-chambers with putred contents, in ordinary alveolar abscesses and in pyorrhea alveolaris. By injecting an abscess of the deep-seated variety with peroxide of hydrogen, introduced through the alveolus

of the extracted tooth, the purulent contents can be thoroughly evacuated.

The oxygen is set free on coming in contact with the products of decomposition, which distends the cavity and forces out the pus through the alveolus by mechanical pressure. Two or three injections of from a half drachm to an ounce, according to the extent of the abscess, may be required to completely remove the purulent matter, and if given opportunity it will search out and purify every hidden receptacle.

Dr. Marshall cites several cases which exemplify the utility of the method he advocates.

THE TREATMENT OF DENTAL LESIONS BY COMPRESSED WARM AND DRIED AIR.

BY H. C. REGISTER, M.D., PHILADELPHIA, PA.

Warm air has been used in the surface-drying of cavities by means of the hot-air syringe, but compressed warm air is more widely useful, and compressed warmed *dried* air has a still greater range. As an obtunder of sensitive dentine in the preparation of cavities ; for the thorough removal of moisture from both vital and devitalised teeth before filling ; the antiseptic treatment of devitalised teeth and roots ; the thorough drying of roots before attaching artificial crowns, making a hermetically sealed joint ; in putrescent conditions of the teeth—especially useful when associated with periodontal ulceration ; in the bleaching of discolored teeth ; in the treatment of fistulæ and abscesses ; in ulcerations of the antrum and nasal passages ; in recession of the gums and pyorrhea alveolaris, etc. By this means the detached gum can be lifted from the tooth by a steady jet of air, allowing an inspection of the parts and the removal of the calculus. Anæsthesia may be produced by atomisation, rendering operations on the gums painless. Fillings of the oxy-chloride or phosphate of zinc can be perfectly crystallised before the fluids of the mouth are allowed to come in contact with them.

In bleaching discolored teeth, moisture in the dentine is the greatest cause of failure. By gently forcing into the cavity an uninterrupted stream of warmed air under pressure,

it reaches the terminal ends of the tubuli in both crown and root. If the bleaching agent is then introduced it will permeate the organ throughout its extent.

Sensitive and hypersensitive dentine is effectually obtunded by a careful application of warmed air at blood heat. The air should be kept at about blood heat and the jet under ready control. In some cases it may be well to secure a surface effect from one of the obtunders in common use, such as carbolic acid, tannin, or atropine, after which the warm air can be used ; and just in proportion as the moisture is removed, just in that proportion has insensibility been produced.

In putrescent conditions the air should be heated to from 100° to 125° F., and the current maintained until every particle of decomposed matter is rendered innocuous by thorough drying.

In pyorrhœa alveolaris the disengaged folds of gum may be thrown back by a steady jet so that an examination may be made, which would otherwise be impracticable, and the progress of the disease may frequently be retarded, and in some cases a cure effected, by forcing medicinal agents by atomisation into the pockets. Fistulous tracts which refuse to heal under ordinary treatment yield when the medicinal agent is forced through them under air pressure.

AMERICAN JOURNAL OF DENTAL SCIENCE.

DEAD TEETH IN THE JAWS.

BY TRUMAN W. BROPHY, M.D., D.D.S.

This article again takes up the cudgels for the dentists, and against the *ex-cathedrà* utterances of Dr. Sexton and the Editor of the *New York Medical Record*.

Dr. Sexton says :—"The retention in the jaws of teeth which are diseased, and have become irredeemably sensitive to thermal influences, or deprived of adequate periosteal nourishment through calcareous formations about the roots very frequently gives rise to nervous diseases about the head.

That diseases of the teeth are often the centre from which pain is reflected to the eyes, ears and other parts, all admit. But these pathological conditions of the teeth can be and are successfully treated and cured, with rare exceptions.

It is not possible to describe the method by which the various diseases of the teeth are treated, but suffice it to say that "teeth which are diseased from death of the pulp or from caries" *do not* "become irredeemably sensitive to thermal influences." In proof of this statement, many thoroughly educated medical men, practising the specialty of dental surgery, will testify.

"Teeth deprived of adequate periosteal nourishment, through calcareous formations about the roots, very frequently give rise to nervous diseases about the head." This statement is true, but the removal of the teeth is not, as Dr. Sexton seems to hold, necessary. If the calcareous deposits mentioned have destroyed much of the pericementum and the alveolar processes and have rendered the teeth very loose and the bony support is lost, the removal is indicated.

If the calcareous deposits have not destroyed the pericementum and alveolar processes to a very great extent, the condition is amenable to intelligent treatment and cure.

The tooth does not become a foreign substance. The dentine and the enamel are no longer nourished after the death of the pulp, but their resisting structure renders them capable of maintaining their integrity many years after the pulp has been removed; and pericementum will nourish the cementum and thereby retain the tooth in its alveolus in a comfortable condition. In order, however, to thus retain the tooth and prevent inflammation from supervening, the devitalised pulp must be removed, the pulp canals thoroughly disinfected and filled with a plastic material which hardens when in position.

About 22,000,000 teeth are annually extracted in the United States, partly due to the indifference manifested by physicians in the anatomy, physiology and pathology of these organs. Hygienic measures directed toward the preservation of the deciduous set, if understood, are seldom recommended by the general practitioner to the families under his charge. The premature loss of these teeth paves the way for early lesions of the permanent set. The pain resulting from advanced caries of the deciduous teeth, owing to the diffi-

culties encountered in controlling the patient, is not easily treated ; moreover, the injurious impressions thus made on the system of the child abide through life. There is no doubt many teeth are unnecessarily extracted each year, and then drugs are given with a view of curing the patient of the disorders of digestion and other abnormal conditions which follow, and which in turn arise from imperfect mastication of food, verily for the want of teeth.

There are certain pathological conditions of the teeth which have not been mentioned in this discussion, and which give rise to reflected pain of the eyes, ears, and other parts.

Among these may be mentioned exostosis of the roots of teeth and nodules of calcific matter within the pulp canals in contact with a living pulp. The former of these conditions has been regarded as incurable, the removal of the tooth with the united bony tumour being indicated. In favourable cases, however, this tumour may be exercised and removed without removing the tooth. The pulp nodules of calcified deposits within the pulp chamber may be, in a large majority of cases, successfully removed without sacrificing the tooth.

MEDICAL AND SURGICAL REPORTER.

DIAGNOSIS AND TREATMENT OF DENTRITIC CYSTIC TUMOURS OF THE JAWS.

By JOHN S. SMITH, D.D.S., Lancaster, PA.

Diagnosis—Cystic tumours may be confounded with other affections which occasion swellings about the jaws, as enchondromata, sarcomata, and myxomata, abscesses, and the collections of fluids in the antrum. Dental alveolar abscess is distinguished by its acuteness, and when chronic by the discharge of its contents through the fistula, either upon the gum, or within the mouth. The abscess swelling is never so sharply definite as cysts ; dropsy of the antrum, the distention of the facial wall of the jaw is more uniform than in cysts.

In some cases of cystic tumours, they appear like solid tumours ; their walls are compact and well organised, almost devoid of fluctuation owing to their extreme distention.

In some cases the removal of one or more teeth is necessary to clinch the diagnosis. After such operation, a probe carried through the alveolus will usually reveal the true condition. One or more dead teeth are found involved—usually one, but two, and sometimes three, are implicated with the tumour. The dead tooth may be easily distinguished from the living ones by its opaque appearance. Such tooth may be carious, and it may not.

Primarily the dentritic cyst originates from what pathologists call a “cold abscess,” that is, an abscess which has never opened; subsequently, having developed into a tumour. The interior of the cyst has a fibrous lining, and being compact in structure, is the seat of an inflammatory process. The cyst contains pus; it may attain such magnitude as to invest several teeth and extend beyond the alveolar process. The tumour is usually oval in shape, with its apex on a line with the diseased tooth directly involved. The size of the tumour varies much; it crepitates under pressure, and feels like parchment. In long standing cases considerable absorption of the alveolar process takes place, and the teeth immediately connected will be loose; especially will this be the case if the alveolar borders are broken; these teeth should be removed. These tumours are found painless.

Pathology.—These cysts may be simple or compound; whether they be cysts of retention, exudation cysts, or extravasation cysts, is uncertain.

There can be little doubt that many of the so-called dentritic cysts of the jaws have their origin primarily from causes brought about by falls, strokes and mechanical violence, causing rupture of blood-vessels. It is quite true, history of cases fully confirms such facts.

Treatment.—The removal of all dead teeth involved. Other teeth whose pulps are living may be loose, and to a casual observer appear to be complicated, but a careful examination will show they should not be disturbed but retained in their places; only one tooth may be the offender, being a dead one. After its removal the cyst walls may be punctured with a sharp instrument, and the contents of the sac released, this being done by carrying the instrument

through the alveoli, and not through the bony parietes of the jaw. After the contents of the sac is let out, and the sharp spicula of bone trimmed, with engine burs, tincture of iodine full strength may be forced into the cyst sac, by saturating tufts of cotton-wool and allowing them to remain, again repeating the treatment at intervals of a day. If necrosis of boes be present, it is good practice to alternate the iodine treatment with aromatic sulphuric acid. Cases generally get well in from six weeks to three months.

TRANSACTIONS OF THE ODONTOLOGICAL SOCIETY OF PENNSYLVANIA.

WHAT FILLINGS SHOULD WE USE.

By Dr. W. G. A. BONWILL, Philadelphia.

Dr. Bonwill points out that any sweeping statement in answer to the question heading his paper must be erroneous, Gold, and he himself perfected a system for its application as a filling, although of great value must, and does fail in many cases. In some teeth the walls of the cavities are so slight that the efficient application of gold as a filling is out of the question, and yet dentists persist in its use. He has personally employed plastics very largely and believes in their use, even though it has become the fashion to decry them.

A gold filling *properly* impacted, with cavity judiciously prepared, and the walls shaped as to forbid future decay, *will save*, irrespective of the frailty of their bony structure. But as thousands of teeth *cannot be so prepared*, so we must find some means more surely to meet the issue.

To enumerate the many cases that forbid the use of gold. would be tedious. There is a fitness in every material that experience has proven to be specially adapted for a given work.

It is not *necessary* to found a *creed or departure* on a law of *incompatibility* to tooth substance.

One skilled in the use of the mallet, with the rubber-dam and a substantial starting point, with walls ever so frail, can perfectly impact and complete the work in gold filling, *provided the surroundings are there*. But allow *one little vacuum*

between the tooth substance and the filling, and a *capillary tube* will be formed to suck up *fermentable material*, and the *acid generated* will act on the tooth whether it be filled with gold, amalgam, oxyphosphate, or gutta-percha. A thousand capillary tubes making porosity in the gold or the amalgam, will not do it; but if there is one, however small, between dentos and filling, destruction is sure.

Literary Notices and Selections.

THE USE OF ENGLISH TUBE TEETH.

By LAWRENCE VANDERPANT, L.D.S., ORANGE, N.J.

The English firm of dental manufacturers, Messrs. Ash & Sons, have brought to this country a large stock of artificial teeth, some of which would surely puzzle the average American dentist to utilize. They are called "Tube Teeth," and are almost a counterpart of a natural tooth, excepting that the nerve canal is of larger diameter, passing entirely through the tooth, and it is furnished with a solid, substantial lining of platina.

Until some twenty-five years since, this description was the artificial tooth, principally, if not entirely, used by the European dentist (certainly the English), the majority not even knowing the method of working "American Flat-back Teeth" as they were called.

Now these old-fashioned English teeth, which will doubtless be pronounced by some of our shining lights remnants of old foggism, are not without their use in modern practice, as I propose to show, and are a very useful adjunct in the office of the practitioner of prosthesis. In a case, for example, where we desire to replace the lost bicuspid and molars by means of a gold or platina plate, they will afford a stronger, broader, and more solid masticating surface; they can be much more accurately fitted to the plate and hermetically united to it by means of the sulphur cement employed in fastening them to the metal pins, so that they are more cleanly in wear than plate teeth of ordinary construction.

* only a very small quantity of solder and heat is requisite

in mounting, there is no danger of warping the plate, and last, but not least, in case of fracture, tooth or teeth are readily and quickly replaced without the necessity of passing the plate through the fire, which will be an acknowledged advantage. But of more general and especial value would they be likely to prove in crown or pivot work, using them somewhat after the plan of Bonwill or Howe, that is to say securing, by means of amalgam, cement, or gutta-percha, a pin, pivot, or post into the natural root, and adjusting thereon the artificial tooth crown.

The plan I adopt myself is to first prepare the root and canal, and I find it a saving of much time and trouble to take a small wax model and articulation of the region in process of repair, making a plaster cast therefrom, and to accurately fit and articulate the Tube Tooth to it. It is now absolutely requisite to have "Easy tube sized hard platina or dental alloy wire,"* and proceed to complete the work at the chair. Determine the length of wire requisite for the root and carefully "tin" this portion only.

It may be unnecessary to state here that this is very easily accomplished by dipping the pin into a solution of chloride of zinc, heating it over an alcohol lamp, and rubbing it upon a piece of common domestic tin previously heated.

Two or three small scraps of zinc immersed in dilute muriatic acid (a drachm or so) will conveniently form the chloride.

Roughly and deeply "barb" the root portion of the pin, cut off accurately sufficient to carry the Tube Tooth, and file up to the bifurcation of its lingual surface.

The pin is now securely fixed into the root with amalgam, taking care that its position shall exactly correspond with the tube in the crown.

I should have anticipated the fastening of the Tube Tooth to the pin by advising it to be just sufficiently roughened to catch a strand or two of finest floss silk, previous to fixing it in the root.

It will be within the discretion of the operator to await the thorough hardening of the amalgam previous to securing the

*The manufacturers supply this wire to exact gauge requisite.

crown, or to proceed at once ; in either case, it is merely necessary to wind a small quantity of floss silk around the pin and apply a strong mastic solution to the tube, and press the tooth into position by a suitable pair of forceps protected with chamois skin ; possibly a judicious tap or two of the protected mallet may make a more perfect joint. The following day an artistic finish may be given to the pin head and lingual surface of the tooth by means of a round headed corundum bur in the engine. I claim for this method many advantages over different methods now in vogue ; prominently may be mentioned, great strength, not only from the platina tube, but from the superior hardness and density of the tooth body, and that the crown is fixed without danger of displacement the moment the patient leaves the chair. The objection might be raised that you do not secure a water-tight joint, but I doubt not natural ingenuity will readily surmount this objection.

The weak points in the "Howe" speak for themselves ; it is unnecessary to allude to them.

The complicated and expensive work in connection with the gold crown method becomes superfluous in presence of the Tube Tooth plan, and lastly, accident can be so readily provided for that the patient, by furnishing him with duplicate teeth, can rectify it himself.

In writing, I have not had in my mind the replacement of the molar teeth, but a little ingenuity will suggest a means of making Tube Teeth serviceable in such cases.—*Independent Practitioner.*

A FACTOR IN TOOTH-PRESERVATION. *

By C. N. PIERCE, D. D. S., PHILADELPHIA, PA.

Mr. President and Gentlemen of the New Jersey State Dental Society :

I fear that I am trespassing a little upon your good nature in coming before you without a written essay, but my time has been so limited in preparing for this occasion that the very best I could do was to arrange some thoughts and give them to you as well as practicable under the circumstances.

* An Address before the New Jersey State Dental Society, July 16, 1885

In answer to an inquiry from my friend Dr. Palmer, as to the title of my subject, I wrote him that it would be a "Factor in Dental Caries," but I subsequently changed it to the more intelligible one announced by your president to-day, "A Factor in Tooth-Preservation;" and I am under obligations to my friend Dr. Atkinson, for opening the way for me last evening, by his opportune remarks on the prophylactic influence of function, because that has been really the subject of my thoughts for the last three months, and was the point I endeavoured to make in my remarks a month ago on the comparative anatomy of the teeth before the New England and Connecticut Valley Dental Associations at Worcester, Mass. What I shall endeavour to do now is simply to elaborate the remarks of Dr. Atkinson last evening, and confirm them with some illustrations of development of the teeth of the lower animal, hoping with these to leave an impression upon your minds which will not soon be erased.

First a word or two upon dental caries. If you ask the numerous teachers in this country to formulate an answer to the enquiry, What is dental caries? they will probably tell you that it is molecular death and disintegration of the tooth-tissue. We will not stop now to discuss the correctness of this answer. It is one that has been almost universally given to classes in dental schools, as well as in the meetings of dental societies. Molecular disintegration we have, but that this is preceded by death is doubtful indeed, and this one point in this pathological phenomenon is well worthy of consideration by any dental society. Many theories have been advanced by thoughtful men regarding the cause of this pathological condition designated dental caries. First, it was held that it was wholly due to chemical action; and there are men to-day who take the ground that that is the only cause. They claim that there is some solvent (an acid) in the mouth which comes in contact with the tissues of the teeth, breaking up the continuity of the structures and dissolving out the lime-salts or inorganic portion. Then, there are others who take the other extreme, and assert that dental caries is the result of vital action; that through some deficiency in nutrition and other abnormal systemic conditions there is a loss of continuity

between the hard or inorganic and the soft or organic structures, and in consequence of the loss of continuity the dissolution of the teeth naturally follows. Another theory is that the cause of decay is chemico-vital ; that perverted or imperfect nutrition during the calcification of the hard tissues results in abnormality, both as to quantity and quality, this being a predisposing cause of caries, the teeth then becoming an easy prey of some solvent in the mouth, which is assumed to be an acid. We have, also, within the last few years, had advanced by our friends abroad as well as at home what is termed the parasitic theory—that decay is produced by certain low forms of vegetable or animal organism in the mouth, some of which, by their roots or mycelium, burrow into the tissues of the teeth and leave them in a condition to readily break down, and that other organisms, by virtue of their contact with the oxygen of the atmosphere, eliminate an acid, and in that way we have a solvent produced by these which disintegrates the tooth-structure. These latter theories entirely overlook the fact that many of these organisms are merely messmates ; that they live in the mouth by virtue of the pabulum on which we also live, and are not parasites at all—living on the remains of our food, on dead and refuse material, and not interfering with the live tissues in any way. Then we have still another theory, that advanced by Dr. Bridgman in England, called the electrical theory ; that it is by reason of a want of correspondence in the electrical conditions of the organic and the inorganic structures that the teeth are broken down.

The fault I find with all of these theories is, not that they, or most of them, have not some grain of truth in them sufficient to warrant their advancement as elements in the problem of decay, but that it is claimed by their several and special advocates that they are *the* element. In attributing dental caries to any one of these supposed causes, we seem to entirely ignore the laws governing the development and nutrition of structures.

When a tooth is developed, it is in accordance or correspondence with law, like other tissues. Its morphology, its structural arrangement, its density, its size, its location, all

are subservient to its function and nutrition. If function is delegated to some other part or organ, nutrition is likewise diverted. Health and normality in any and every respect must be preceded by normal or natural exercise of function. The arrangement of the tissues, the size, shape, and destiny of the teeth are not matters of whim or accident, but are due to the natural result of the mechanical forces that have been brought to bear upon them; they are the result of the degree and direction of force that has been exerted upon them by the food habit through many successive generations; they are in exact correspondence with the amount and direction of force that has been and is exercised in the preparation of the food, or in the exact ratio of the amount of resistance offered by the trituration of the food upon which the animal lives. This brings tooth-formation down to the single point of food habit, and in my estimation *tooth-formation and nutrition are the result of food habit.*

In the treatment of the mouths of many children we see unmistakable evidence of this absence of function. We risk nothing in saying to the mother or guardian of many of these patients that the food is washed into the stomach with one of various liquids without mastication, and we may with safety and great propriety add that, unless there is some change in the food habit of this child, our success in the direction of tooth-preservation will be very limited. Fluids must be restricted at meal time. Solid food must be substituted for the semi-solid, and the eight or ten minutes usually occupied in the consumption of a meal must be extended to twenty-five or thirty minutes. I say constantly to the parents of my young patients: If you want to save this child's teeth, you must banish drink from the table during meal time; let the children drink all they want before and after meals, but at meals the food should be taken as nearly dry as possible, and let the child spend half an hour or so in its mastication, utilizing the natural secretion; not washing down its food with copious draughts without an effort on the part of the teeth to triturate and prepare it for the subsequent digestive process. I bring up this point here because I want to make it more clear that, in my estimation, the loss of function

is one great cause of this rapid decay of the teeth. The healthy or normal development of the teeth is exactly in proportion to the stimulus of the resistance that is offered to them in the cutting or mastication of food.

Now, gentlemen, a recognition of the foregoing is what interests *us* as dentists, and in behalf of our *patrons* or *patients* for their own welfare and comfort. In continuation of my remarks, I hope, with the aid of these specimens upon the table before us, to show you how these various tooth-forms have been the result of jaw movements, and these movements, again, a necessity by virtue of the kind of food ; and so in regular succession, we can safely say, first that food habit has been the important factor and controlling in shaping tooth-forms ; second, that the restriction and limitation of diet has contributed to specialization of the teeth ; third, the degree in which teeth are changed or modified in form and structure is in proportion to the differences in the degree of resistance to be overcome in the mastication of food.

For the sake of perspicuity, and at the risk of being tedious, let us first define a tooth, with its location, function, etc.

The definition given is, that it is a hard substance projecting from the surface of the mucous membrane ; it is differentiated from the surrounding structures, and opposes another tooth, or a dental plate, or else in its function works against some other substance less dense. It is located in the anterior or pre-assimilative portion of the alimentary canal, and in mammalia it is confined to the inferior and superior maxillæ, always working in a vertical or modified vertical direction, and against other teeth or some dense substance, so as to stimulate its nutrition and health.

All teeth may be arranged into five classes. First, the simple cone-shaped tooth which is represented in the cuspid of the carnivora, the prehensile teeth of all animals swallowing their prey whole, and a large class of fishes, as well as the poison-fang of reptiles and the teeth of the sperm-whale. These are among the simplest form of teeth found in the animal economy. The next would be a chisel-shaped tooth, examples of which we see in the incisors of the rodents and

other vertebrate animals. In the third class we place the trenchant-shaped teeth seen in carnivorous animals, which shut over each other like the blades of a pair of scissors, and are for lacerating or tearing. Then come the teeth which we find in the monkey tribe, having little tubercles on the triturating surface for crushing. The fifth and last class are the molars, represented by those of the elephant and of the rodents, but the most specialized or typical are those found in the herbivora, used for grinding grass and dry food. Nearly all the teeth of the animal kingdom may be placed in one of these five classes, by a little addition or subtraction corresponding with modifications in food habit and mandibular or jaw movement.

When we pick up a mandible that is armed with cone-shaped teeth, we know very well that its movement is limited to a vertical or up-and-down motion. The teeth in it are not for the trituration of food, but for seizing it. Corresponding with this cone-shaped tooth and the vertical motion which is found in all carnivorous animals, and which is not a mere matter of taste or accident, but of necessity, because of the class of food upon which the animal subsists, we find the shape of the condyle and the glenoid cavity to correspond—the latter hugging or so adapted to the former as to preclude any other motion. So we see that the food habit controls, not only the movements of the jaw and shape of the teeth, but the form and adaptation of the condyle and glenoid cavity.

We now take the other extreme in shape, represented by the molars of the rodents and the elephant. We find instead of the glenoid cavity a convex surface and the condyle a flat or slightly concave surface, which slides over the convex surface of the glenoid cavity; and this arrangement permits not only a lateral motion of the jaw, but the antero-posterior which is so essential to the rodent. But the food habit of the animal was the first factor or necessity which produced the lateral and antero-posterior motions, and these motions gave us the tooth-form, the condylar articulation of necessity following. We might follow this up through the whole anatomical structure of various animals, and find correspond-

ing results in the digestive organs as well as in the modes of progression of the animals.

The teeth of the mammalia, and indeed nearly all of the vertebrata, are made up of three tissues—dentine, cement and enamel, the enamel-germs being present in all. In a large class of animals, as in man, these tissues are arranged with the dentine in the centre, the enamel covering the dentine of the crown, and the cement covering the dentine of the root. This is the common arrangement in the teeth of all carnivorous and omnivorous animals; and in these animals we find the teeth less specialized than in the herbivora and rodentia, where, instead of having the enamel covering the crown, it is arranged in transverse lines running across the triturating surface, or the peculiar W-shaped pattern, by a dipping in of the enamel from the sides, as is seen in many of the herbivora. Where there is an antero-posterior motion of the jaw in connection with this the most complex structural condition. The object of this arrangement is patent to every one—the three tissues being of different degrees of density, and standing side by side, there will always be an uneven surface, with the most dense tissue prominent, which is most efficient in the preparation of the dry food upon which the animal subsists.

Again we recognize that this peculiar adaptation of the teeth to the necessities of the animal is the result of food habit. There is no exception to this rule. It is the force exercised upon the teeth which modifies their form and structural arrangement.

If you will bear with me a few moments, I will show you how true this is throughout the animal kingdom. Taking, first, some illustrations from the invertebrata—animals without a back-bone—their teeth are with few exceptions not dense, but shaped by food habit and jaw movement so as to be efficient in mastication. Commencing with this little animal which I hold in my hand, and with which we are all familiar, the echinus, designated Aristotle's lantern, because first described by him, we find that it has five teeth and five jaws, moved by thirty-five muscles. It subsists upon shell-fish, and by the movement of these teeth, with sharp, cutting edges, it drills a hole in the shell of its prey and sucks out

the juices. The echinus is an animal with primitive nervous organisation, yet it has sense enough to have good taste, and by its liking for shell-fish does considerable injury to the business of the oysterman. This is one of the most complex arrangements of tooth-structure that is found in the animal economy.

(To be continued.)

Dental News.

MONTHLY REPORT OF CASES TREATED AT THE DENTAL HOSPITAL OF LONDON.

From OCT. 1st to OCT. 31st, 1885.

Extractions	{ Children under 14.	378
	{ Adults.	912
	{ Under Nitrous Oxide	276
Gold Stoppings	. . . . .	267
Other Stoppings	. . . . .	879
Advice	. . . . .	121
Irregularities of the Teeth	. . . . .	97
Miscellaneous Cases	. . . . .	387

Total 3317

J. C. VIPOND-CROCKER, House Surgeon.

DENTAL HOSPITAL REPORTS. NATIONAL DENTAL HOSPITAL

MONTHLY STATEMENT OF OPERATIONS FROM OCT. 1st. TO OCT. 31st.

Number of patients attended	. . . . .	1827
Extractions	{ Children under 14	424
	{ Adults	555
	{ Under Nitrous Oxide	614
Gold stoppings	. . . . .	121
Other Stoppings	. . . . .	625
Advice and Scaling	. . . . .	421
Irregularities of the Teeth	. . . . .	409
Miscellaneous	. . . . .	146

Total 3315

ISIDORE FREDERICK PRAGER, House Surgeon.

CASES TREATED AT THE BIRMINGHAM DENTAL HOSPITAL.

SEPTEMBER, 1885.

Patients	. . . . .	970
Extractions	. . . . .	711
Fillings	. . . . .	231
Gold Fillings	. . . . .	4
Miscellaneous	. . . . .	24
Anæsthetics	. . . . .	23

October, 1885.

Patients	. . . . .	970
Extractions	. . . . .	701
Fillings.	. . . . .	241
Goldfillings	. . . . .	3
Miscellaneous	. . . . .	28
Anæsthetics	. . . . .	14

FRANK HAMPDEN GOFFE, L.D.S., Eng. & Edin., House Surgeon

British Journal of Dental Science.

No. 429.

LONDON, DEC. 1, 1885.

VOL. XXVIII.

NERVOUS EXHAUSTION.

MAINLY IN ITS BEARING UPON OPERATIONS AND THE
INDUCTION OF ANÆSTHESIA BY NITROUS OXIDE.

By DUDLEY W. BUXTON, M.D., Lond., B.S., M.R.C.P.,
Administrator of Anæsthetics at University College
Hospital.

In submitting this note to the dental, and, indeed, to the whole surgical profession, I am actuated by two reasons, one is, that experience has taught me nervous prostration is a condition imperfectly understood and so, little prepared for, and the other reason is, that I have recently met with some cases which serve well to illustrate the condition and to emphasise the paramount importance of due attention to it.

In my daily duties of administering anæsthetics, I have been struck alike by the wide range of disparity which exists among patients with regard to their resistive power to shock, whether we mean by that term, the effect of the operation or the effect of the anticipation of surgical (and so dental) procedure. One man will take chloroform with as much indifference as he would show to the smoking of a cigarette, will submit to litholapaxy, and demand a steak upon "coming to." This individual pursues his diurnal duties almost as soon as he has passed from the hands of the surgeon and the anæsthetist. How different then is such an one to the highly strung excitable patient, who scarcely dares quit consciousness, who struggles against the nepenthial influence of the anæsthetic, and who, when the operation is over, presents the aspect of one who has passed through some tremendous ordeal, is crushed and almost collapsed, a condition, by-the-

way, which does not seem to be solely, or even mainly, dependent upon the amount of blood lost. The explanation of such bizarre results accruing, when to all appearance, the conditions which environ the patient seem quite similar, has been a subject of much interest to me, and to offer some suggestions towards it forms the theme of my present communications.

It seems probable that shock, as a factor in reckoning the danger of any operation, great or small, depends upon the following conditions, amongst others :—

(I.) The nature and extent of the operation, whether much hæmorrhage takes place.

(II.) The site of the operation, thus the severance of any large nerve, e.g., the optic ; surgical procedure about the anal region, the generative tract, produce an amount of shock quite out of proportion to the loss of blood entailed or the length of time during which the patient is under the hands of the surgeon. In even trivial operations, such as circumcision, it is no uncommon experience to witness an extraordinary effect upon the individual, so with castration.

(III.) The resistive power of the patient himself. By this, I mean, the apparently inherent phlegm of some men upon whose stolidity no amount of knocking about seems to have much effect, and their antitheses, whose temperature will run up to 104 deg. for the toothache, and whose whole system becomes upset for a trivial measure, e.g., the extraction of a loose tooth, and

(IV.) The state of health of the individual at the time of the operation. Is he in the enjoyment of a normal and even tenour of good health? or is he the victim of harassing pain, care, and worry? I propose to employ the phrase nervous exhaustion to signify that state of depreciated health, or, as I should prefer to call it, depressed vitality, which ensues upon these same pains, worries, etc. And it is upon this last development of the question, that I propose to dwell. I intend, further, to restrict the question to dental operations.

The branches of the fifth pair of nerves are well recognised as being peculiarly obnoxious to painful influences. Syncope

is more easily excited through reflex sensations, transmitted through the fifth pair, than, perhaps, any other nerve with an external peripheral distribution. This same pair of nerves seems to be especially difficult to deal with in the matter of inducing analgesia and anæsthesia in areas, supplied by their branches. In the case of chloroform certainly, all sensation seems to depart from other regions (except certain areas with which we have at present no concern) before it is abolished in situations, supplied by the Trigeminal nerve. Schirmer* found that he could recall to consciousness patients narcotised by chloroform by irritating the mucous membrane lining the nostrils, employing mechanical means. It would thus seem that dental surgeons are habitually engaged upon a portion of the human frame, which is particularly under nervous influence, is, so to speak, hyperæsthetic as regards other portions. And further, some of the operations of dentistry, and tooth extraction, which inflict nerve laceration, are essentially painful, and calculated to induce shock. That that condition is in by far the largest proportion of cases very trivial indeed, and scarcely deserves so strong a term as shock, is admitted upon all hands. However, this happy exemption is not universal. Cases occur in which take place the most profound nervous exhaustion, shock, or collapse, what ever name you care to adopt. We habitually minimise pain, and rightly when anæsthesia is not induced, but this condition of nervous exhaustion is more frequent than when the patient feels no pain, but even in the last case it does occur. When nitrous oxide gas has been employed, the patient in a certain number of cases becomes profoundly affected by after-shock. Take the following as an example.

Mrs. A. B., a well-built, slightly stout lady, about 58. the subject of no organic disease, appealed to her dentist for advice. He finds an extraction necessary, and summons an anæsthetist. I, acting in that capacity, examined the pulse as is my wont, took in the general aspect of my patient, and attempted to re-assure her, by a few cheerful words and directions, as to how to breathe etc. The lady was very nervous about taking the anæsthetic, and was the subject of many fears and

* Centralblatt f. Augenheilkunde, Feb. 1881.

much trepidation. However she took nitrous oxide with perfect facility, became quite unconscious, and remained so for nearly a minute after the tooth (a molar, and easily removed), had been extracted. The pulse never flagged, respiration, although slow, did not intermit. The patient, however, remained absolutely placid, heedless of the bleeding from her gums, she allowed the blood to flow down her throat. To no exhortations, to no stern commands, did she show herself the least amenable. Life was performing its junctions perfectly, volition, will wholly in abeyance. Of course, such a case is put down as Hysteria, but such a diagnosis, even if accurate, carries us not a step further. The state was protracted for over an hour with little or no change, some slight vomiting of a little clotted blood occurred, and, eventually, the patient went away, very prostrate, greatly shaken. Curiously enough, quite a similar case occurred in my practice the same week. I may mention the gas, apparatus, etc. had been employed for other cases, so they are in no way disturbing conditions. These two cases are typical. I have met with others sporadic amongst many, occurring sparsely amidst hundreds of perfectly normal cases. Contrasting such cases, and comparing them with others of which I am assured by those who habitually administer anæsthetics, I am bound to admit they present features which are certainly distinctive and as surely traceable to definite causes. We may then consider them more fully because they read a lesson alike to operator and anæsthetist.

These cases agree in the following points : The patients are usually of an excitable temperament, are nervous, and very apprehensive. It is exceptionable for any trouble to occur while the anæsthetic is being administered, but upon the completion of the extraction, signs of more or less strongly emphasised exhaustion or collapse manifest themselves, and these persist for an hour or so, even for twenty-four or forty-eight hours.

When careful observation of the history of such cases is made, some salient enough cause for the trouble will, in most cases, be elicited. Of course, it often happens a patient may come to a dentist and consult him, although almost a stranger,

under these circumstances, it is more than likely the history will not be too curiously enquired into, and so the only clue lost which might have forewarned against the supervention of these phenomena of shock.

Pain, more especially in the neurotic, engenders a marked irritability of the nervous system. With this condition is associated sleeplessness and loss of appetite. We have here then a collection of most powerful predisponents to nervous exhaustion. How often does it happen that an abscessed fang sets up an amount of cellulitis or phlegmon which completely wears out the reserve store of nervous energy. When this happens, the vitality is so depressed that the anæsthetisation and operation are really more than the individual can stand, and so he reveals profound nervous exhaustion. In anæmic, bloodless persons, in those whose blood is poor, as the saying goes, this reserve store of nervous energy is very readily exhausted. In women worn out by frequent child-bearing, by over lactation, in society dames and demoiselles, whose days are nights and nights are days, we find nervous exhaustion rife.

It is most important to fully appreciate what is the true character of the phenomena evinced by such patients, otherwise, groundless alarm may be occasioned, or, on the other hand, extensive operative procedure undertaken, which must prove highly prejudicial under the circumstances. And it is also well to be upon the look-out for these cases, and, if possible, forewarn the patients, as otherwise they will inevitably lay the blame to the door of the anæsthetic, or possibly the operator, and so, in either case, commit an injustice either in fact or thought.

But granted that one has made out the presence of nervous exhaustion, what is one to do—to postpone the operation, or incur the risk and so spare subsequent pain or the tooth or abscess?

PRESIDENTIAL ADDRESS.*

By PROF. GEORGE H. MACLEOD, M.D.

GENTLEMEN.—Mr. Herbert Spencer in the work on Sociology brings strongly before the mind of the reader the importance of the individual in going to form the aggregate of a Society or a nation. If, he argues, we find a community composed of men physically enfeebled, morally depraved, or intellectually deficient, then we need not expect to find that nation, taken as a whole, pre-eminent for its courageous acts, moral tone, or scholarly attainment, nay more, as generation succeeds generation there will be a progressive degeneration, till the enfeebled nation is seized upon by a stronger neighbour, and incorporated as a part of itself. Common-sense and the history of the past alike confirm Mr. Spencer's teaching, and therefore we, who have formed ourselves into a new Association, must remember that in doing so, we have declared that our Society as a whole will be but an aggregate of our individual energy or apathy, a summation of our desire or disregard for our collective advancement in those questions which should be so dear to the heart of each of us. In fine, gentlemen, recognising that we and the Association are but synonymous terms we must be careful so to spend our time together that the sum-total of our endeavours will but stimulate us to higher attainment; will but draw us into fellowship and sympathy with each other; so that in the far future we may look back upon our connection with the Society, with that pardonable pride associated with something attempted, and that well done.

Having determined the necessity of such an Association we have endeavoured to build it upon a sure and steadfast foundation. Our rules have been carefully considered, and will, I venture to say, be found adequate to the keeping of order, and furthering our aims. The places of honourable office have been filled up for the year, and I am sure I am only expressing the feelings of my *confrères* when I say that we will do all in our power to fulfil the charge committed to us, in a way worthy of the trust and confidence you have reposed in us.

* Delivered before the Edinburgh Dental Students' Society.

Perhaps it would not be out of place were I to endeavour to sketch the objects of our Association and some of the ways in which they may be carried out. Our first desire must be not merely to exist but to grow—"the life is more than meat, and the body is more than raiment,"—and we must see to it that our ideas of membership do not culminate in paying an annual subscription, nor yet must we content ourselves with passively attending the monthly meetings. What growth requires is nutrition and exercise, two factors which I hope every gentleman will endeavour that the Association lacks for neither.

Of course as Specialists, or intending Specialists, the greater portion of each Session will be devoted to a consideration of the principles of the Science and Art of Dental Surgery, but there need be no necessity for excluding matters related to any of the kindred sciences. Papers with discussions thereon will form the chief vehicle of information, but at the same time I would, by your consideration of the benefits that would be derived from the frequent exhibition of specimens of pathological interest, together with an account of the ætiology of the case, so far as known, the treatment adopted, and with what success it was followed. But while fostering the scientific and speculative branches of our profession I think we shall err if we rest contented there—however attractive theory may be to some minds there usually is found a considerable proportion who prefer practical considerations and actual work; and these gentlemen will doubtless, as occasion offers, give demonstrations before the Society of those niceties of our Art, in which, through special study, or natural aptitude, they have become more than ordinarily proficient.

Doubtless too it will be our pleasure throughout the year to hear the experiences of several of our Honorary Members, some of whom have personally been able to watch the development of our calling from a position little better than that of a trade, to its now deserved rank as one of the learned professions. I have a sincere and heart-felt respect for all whose hairs have grown grey in the service; they sowed, I fear, often in doubt and uncertainty, and after having borne the heat and burden of the day they have left us the goodly

heritage of the benefits of their most successful efforts: shame and disgrace then be on those who would desparage the offering of a life's hard work. Could it be arranged I should like to see a conjoint meeting with our sister Society in the East, as such a gathering would but tend to strengthen the bond of union which should already exist between us. We have with them the same interests at heart, and such a meeting would doubtless be productive of a mutual and lasting benefit.

It, then, gentlemen, these ideas find practical expression, our session will not be a void and empty one, it will have increased our knowledge of the subject we have selected to be our work till the days come when rest will be one of our chief enjoyments, and it will have drawn us together by ties which no power can sever; for fellowship and friendship are, I may say, too sacred to be assumed and cast off at pleasure. We are a small body as yet, but that is no reason why we should not be a useful one: there may be a great future before us, and its magnitude will depend on individual effort, expended not by fits and starts, but well balanced, continuous and persevering.

THE TREATMENT OF FACIAL NEURALGIA.

By Dr. PRICE, Birmingham.

Facial neuralgia is generally caused by irritation of dental nerves, but it may also arise from debility, cold, or pregnancy. Occasionally, too, cases may occur in which the cause is too remote for diagnosis, and then it is customary to pronounce it the result of some disease of the great nerve centres, the brain or spinal cord. But whatever may have caused its onset the dentist rarely experiences much difficulty in distinguishing it from common toothache. Its intensity—the burning, plunging, lacerating character of the pain; and the fact that the patient will trace with the finger the course of the nerve branches as the parts affected, render it almost impossible to confound it with toothache. Besides which it usually occurs in periodic paroxysms, the pain being almost

unbearable at one part of the day or night followed by a time of complete cessation.

The severity of neuralgic pain calls for prompt and decisive treatment. Homœopathic remedies or small doses of medicine are not of the smallest use. After carefully examining and treating the teeth, and *if possible* removing such as cannot be brought into a healthy condition, vigorous measures should be taken to give the patient ease. I say *if possible*, for it sometimes (often) happens that patients will bear almost any amount of pain sooner than submit to the extraction of a tooth. Every operator has experience of such cases. Persons apply for advice—seek help—but positively refuse to undergo an operation ; and if the dental practitioner refuse his aid in such cases, they leave him and consult a surgeon, and he never hesitates to prescribe and to take his fee. But, it may be asked, in such cases—in severe neuralgia—is there room for hope that medical treatment without surgical intervention will of itself be capable of affording relief? I think so ; and whenever the dentist is consulted by patients too nervous for the rough treatment of the forceps if he will try the methods indicated in the following cases he will be rewarded by most gratifying results.

CASE I.—Mrs. R., æt. 25, fair complexion, very delicate, mental temperament ; blue veins seen distinctly through transparent skin, had borne five children in as many years, had been suffering for some weeks, and had tried everything recommended but without receiving the slightest benefit. Three teeth had been extracted but neuralgia remained as severe as ever, and *now positively refused to submit to any kind of operation*. On looking into the mouth I found the teeth so badly decayed that to hope to afford benefit from an operation quite a number of roots would have to be extracted, and several teeth stopped. This she refused. Neuralgia, although present during the day, not violent ; but at night and in bed its intensity was more than she could bear. I ascertained that a seidlitz powder would be sufficient to cause the bowels to act freely, and ordered one to be taken at once, to be followed by warm fluids to hasten its action, and as soon as the purge acted I recommended the patient to

take six grains of quinine—the powder on the tongue taken down with a little water. I insisted upon the teeth being rinsed with tepid water, *gradually* accustoming them to being brushed with cold, which should be continued twice daily. Patient called following day to say she had enjoyed a good night's rest. Ordered three grains of quinine to be taken about an hour before going to bed on an empty stomach. Continued the three grain doses for two nights more, then reduced the dose gradually. Case cured.

CASE II.—Mr. P., æt. 26. A tall, well-built man. Left side of the face quite raw from the effects of a strong mustard plaster, and the tongue and mouth sore and inflamed, the results of a free use of cayenne pepper. Tongue white, and the breath offensive. Had tried everything he could hear of, but night and day for more than a week had found no rest. Anything taken into the mouth, the slightest change of temperature, or movement, caused the most excruciating agony which would last for a time and then subside. At night the pain lasted till about 4 a.m., and then wearied out he could sleep for hours. Teeth somewhat irregular, tobacco-stained, but apparently all sound. By carefully examining each tooth on the affected side separately, I discovered that the left inferior wisdom tooth was decayed, and though the external decay was but trifling, yet from the general appearance of the tooth, I fancied it was ready to crush in the first time it might be bitten on with anything at all hard. I recommended the immediate extraction of the tooth, but was met with a most emphatic negative. Then I proposed enlarging the opening so as to destroy the nerve, but my patient shook his head, and declared that nothing in the world should ever induce him to let a "Dentist put his irons" into his mouth. This was about 10.30 a.m. I ordered a strong dose of salts to be taken at once. The salts to be taken quite warm, and to be followed by other warm liquid till the medicine had thoroughly evacuated the bowels, and then six grains of quinine to be taken as in Case I., and an hour before bed time I directed the patient to take three grains more. Patient called next day but one to say the pain was quite gone, though the tooth remained a little tender. I recommended

another six grains of quinine, and then the dose to be gradually lessened. A fortnight after I had the satisfaction of hearing that the case was cured.

The above treatment is nearly always effective. Only recently I have had a case of a very severe character successfully managed by these two medicines; and I can well remember others in which the treatment corroborates the statements here made. Some dentists may think the doses of quinine too large, but it will be found that in all ordinary cases from six to twelve grs. may be given in the twenty-four hours with perfect safety. It should be particularly remembered, however, that occasionally patients cannot bear quinine in any form, and then, of course, large doses are altogether inadmissible. In such cases a brisk saline purge and the application of cold—either water or ice—will often be found beneficial. When debility is the cause of nerve pain, cod-liver oil, etc., should be recommended.

THE ACADEMY OF MEDICINE OF BELGIUM, BRUSSELS.

FROM AN OCCASIONAL CORRESPONDENT.

At the meeting of the Academy of Medicine on September 26th last, Dr. Deneffe of Ghent, drew attention to the present status of dentistry in Belgium. It would appear from his remarks and from the discussion which followed, that a committee was appointed in May 1879 to inquire into the whole subject of dentistry, but that no report has as yet been received. In 1878, when the subject was first mooted, at none of the various medical schools of Belgium was there a solitary course of lectures or any clinical teaching of dental surgery or prosthesis. Needless to say, of course, that there was no dental school or college in existence.

In this country, said Dr. Deneffe, the teaching of the dental art is altogether in abeyance, there is no school and no course of lectures, at which instruction can be gained in this subject. Candidates for the dental diploma, are examined by a jury of men, who know absolutely nothing

(*absolument incompetents*) of the affections which belong to the domain of dental surgery or prothesis.

Dr. Deneffe concluded by a vigorous appeal to the academy, to put an end to this disgraceful state of things by a speedy reform of the laws relating to the exercise of the profession of dentistry. On the motion of Dr. Warlomont, the whole subject was referred to a committee with instructions to report on what is being done in the matter in other countries. It is to be hoped that in this case "reference to a committee is not synonymous with *ad fracs calindas*."

AN EXAMINATION FOR THE DIPLOMA OF DENTIST.

The subject matter of the examination for the dental diploma has been fixed as follows, by a recent *arrêté Royal*. (30th December 1884):

A. ANATOMY.—The oral cavity and parts in immediate relation to it.

B. PHYSIOLOGY.—Of the different organs connected with the mouth. Different forms of dentition.

C. PATHOLOGY.—Most important diseases of the jaws and sinuses. Diseases of the teeth. Diseases of Dentition.

D. DENTAL SURGERY AND MECHANICS.—The various operations which are performed on the teeth. Artificial teeth, sets, and obturators. Hygiene of the mouth.

Whether this programme is sufficiently extensive to meet all the requirements of a dentist's practice, is a point, the discussion of which, we would leave to abler hands than ours.

In the June number of the *Revue Odontologique* Dr. Quinet gives a most amusing account of an examination at which he assisted. One solitary candidate had mustered up courage to face the ordeal, and the three examiners, three medical men of very good standing, but whose combined experience of dentistry, a wag might say, was restricted to the natural teeth they had lost and the artificial ones they were wearing. After passing a very successful written examination and creditable *vivâ voce*, which, Dr. Quinet says he must do the examiners the justice of stating, were on subjects strictly relating to dentistry, the candidate was requested to proceed to the practical part. The jury rose and followed by the candidate and the public who assisted at the examination,

descended to the dissecting rooms, for the practical examination of a dentist is always held on the cadaver in Belgium. But nobody was to be found, and in order to keep within the strict letter of the law, the onlookers were asked to volunteer and allow the candidate to exhibit his powers *in corpore vile*. This request not having met with any response, a skull was brought out of a cupboard, the candidate was asked a few questions about one of the wisdom teeth and a large cavity in one of the lower molar teeth, which one of the examiners thought would be difficult to treat. This concluded the series of tests and the candidate was told to apply a few days afterwards for his diploma.

THE "SOCIETE ODONTOLOGIQUE" AND THE "REVUE ODONTOLOGIQUE DE BELGIQUE."

The "Revue Odontologique de Belgique" has been handed over by its proprietor and founder Dr. Quinet, to the Odontological Society of which it is now the recognised official organ. We are glad to hear it has proved a success both from a literary and financial point of view, especially as it has on several occasions threatened to become a rock on which the very existence of the society would have been at stake.

The Society held its first annual meeting on Sunday last, November 8th at the Hotel de Ville. The proceedings were of a somewhat stormy nature, the chief points of contention being the editorship of the paper, the subject of indirect advertising, and the claims of the provincial members to be represented on the Committee. Mr. Delapierre of Brussels was elected President, and Messrs. Powroeur of Antwerp, and Thomsson of Brussels, Vice Presidents for the ensuing year.

In the afternoon most of the members met again at the Hotel Mengelle for the anniversary dinner, Mr. Fay, senior, the outgoing President, took the chair. The menu was good and the wines excellent, and all members seemed to have it at heart to make it what it turned out to be, a most successful and enjoyable gathering.

FOURTEENTH SESSION OF THE ASSOCIATION
FRANCAISE POUR L'AVANCEMENT DES
SCIENCES.

HELD AT GRENOBLE, 1885.

THE SO-CALLED DISEASES OF DENTITION.

For the last seven years Mr. Edmond Chaumier (of Grand Prestiguy) has most carefully examined every child he has been called upon to attend, and has kept detailed accounts of most of his cases. He has come to the conclusion that, contrary to the opinion generally held, the teeth have nothing whatever to do with what are usually known as the accidents of the first dentition.

Most authors, he says, divide the diseases of dentition into local and general affections.

1st. Local diseases : These are said to be directly due to the irritation of the new tooth and to the afflux of blood which occurs in the parts round about it ; they are said to consist of diverse forms of inflammation, pseudo-membranous ulcerations, aphthæ, and painful swelling of the gums, etc.

Every one in the present day knows what the true nature of pseudo-membranous affections are, they are distinctly epidemic. M. Chaumier has satisfied himself that aphthæ are also due to some general cause. It is very uncommon to meet with a single case of aphthæ in any country ; although in many cases several persons in one house are affected at the same time.

As to the swelling of the gums this is neither painful nor inflammatory. M. Chaumier has only once met with a painful gum, and in that case the tooth had already been cut for some time ; the gum was red and detached without any apparent cause, and the child cried when the affected part was touched with the finger.

2nd. General affections : The author restricts himself to the consideration of the affections which are usually looked upon as the effects of teething.

a. Diarrhœa.—It is very difficult, by the study of French authors alone, to acquire a definite idea of what is included in the term diarrhœa of children. There are, however, two very

distinct species of diarrhœa : diarrhœa or athrepsia resulting from insufficient or improper feeding and the epidemic form known in England as "summer diarrhœa." This epidemic diarrhœa which may occur at any period of the year, but which is much more prevalent during the hot season, is what is usually attributed to teething. When children begin to cut their teeth the parents say, their bodies are changed. But if attention is paid it will be seen that the bodies of our young daughters begin to change whether they cut their teeth or not.

b. Cough.—Two diseases usually give rise to a cough in children, pneumonia, an epidemic affection, which is sometimes rather difficult to diagnose, especially when you are not used to children, and bronchitis. Bronchitis let it be ascribed to whatever cause you like, is much more epidemic in its nature than pneumonia. When any one person has a cough in any locality many others are sure to be affected in the same way. And yet each time a child begins a cough the parents are sure to say, the child is teething. But if enquiries be made in the house, in nine cases out of ten someone else will be found to have a cough also, either the father, mother, or a brother or sister ; and if you say to the mother : "Why you have a cough, you are most likely teething too ; she will not be convinced, so deeply rooted is the prejudice.

c. SKIN ERUPTIONS DUE TO TEETHING.—Tooth eruptions is the name given to cutaneous eruptions which break out on the face, the eye brows or the top of the head. These eruptions are either crusts of impetigo or undeveloped vesicles of the same disease. And just as impetigo, as shown by M. Chaumier at Blois last year, is a manifestation of an epidemic, contagious and inoculable disease, so you may, if you care to do so, give yourself the pleasure of discovering amongst the people immediately around the child, the person who has transmitted the disease.

d. FEVER.—Dental fever is another one of the accidents described by authors. A child is feverish for very many reasons, and it really is so easy to say, his teeth are the cause of it. When a child has fever, you must find out the cause of it. A certain number of diseases in children will pass

unperceived unless they are looked for. The author has already spoken of pneumonia.

Another class of disease of more frequent occurrence than pneumonia and which may easily be overlooked, is angina. Leaving aside diphtheritic angina there are two forms of angina equally epidemic, i.e. that are met with at the same time in a large number of persons : the so called erythematous angina or angina simplex, and another which has hitherto been mixed up by most writers with the latter, and to which M. Chaumier gives the name of tonsillar fever (*fièvre amygdalienne*) because the febrile state is far in excess of any other symptoms. The disease has a sudden onset, like pneumonia, with high degree of fever and often vomiting, and this general condition which appears to be of a serious nature may lead you astray, and cause you to overlook the fact that the tonsils are slightly infested with or without some whitish secretion, and also not perceive that behind the ascending ruams of the maxilla the immovable tonsil is increased in size.

Besides these maladies, other undetermined affections are met with in children though not more frequently than in adults; to which for want of a better name, that of gastric disturbance has been given, etc., and which are most likely attenuated forms of several diseases.

e. CONVULSIONS.—The chapter of convulsions is not one of the most clear of diseases of infants, yet it is well known that they develop in the course of diseases of the nervous system, in epilepsy and hysteria ; it is also well settled that in children of an hereditary nervous temperament most febrile affections can give rise to convulsions.

And then it must not be thought that convulsions are as frequent as they are said to be, in many cases timorous parents take for convulsions even slight movements of the child.

In diseases of children therefore, just as in general practice, we must see first and believe afterwards.

British Journal of Dental Science.

LONDON, DECEMBER 1st, 1885.

DENTAL FEES AND THE PUBLIC.

WE are constantly having cuttings and M.S. notes sent to us, the gist of which is that the public is gullable, and the reign of quackery is not less rife than heretofore. 'Tis true, and pity 'tis 'tis true. The burden of the tale is, that some unhappy creature goes to an advertising quack to have the ravages repaired, which time has wrought in his or her jaws. The jaws are then duly sheathed by those instruments of torture, ill fitting plates, and the patient cajoled out of a plump fee to go on his way, alas ! not rejoicing. The sequel is, in some cases, and reports of these usually reach us, that the fleeced one appeals to halting footed justice. How many are there, however, would never have resort to a court of law, who are content to pocket their grievances, and learn to be, if not better, at least wiser, men. These miserable cases are a sad blot upon a profession like that of dentistry as it exists now-a-days, their publication cannot subserve any good end and is liable to mislead the public. Were it possible for the British Dental Association to grapple with instances of overcharging and malpraxis, then publication would be useful as it would give the wrong-doer his *conge* from respectable dentists, and the public would discern how loathsome the dental world hold such proceedings to be. The British Dental Association has no such facilities, it pursues its many courses of usefulness in other directions, and so the *quasi*-dentist and his victim are left to fight out their battle after the manner of the *Felidæ* of Kilkenny. Now who is to blame ? and wherein lies the remedy ? The response to our first query is far more easy to find, than one which satisfies the second. Without bringing a "railing accusation" against anyone, we may say that the public are most culpable ; the man who will try cheese paring with any *bona fide* dentist, who may be tempted through poverty to accept small fees, and yet will rush helter skelter into the arms of the the first quack or charlatan, who brays loudly enough, and will write him a check without a murmur deserves what he

gets. It is of course a vast temptation to a man to see the unrighteous in matters of dental etiquette prosper by pelf, while he can scarcely maintain the physical evidences of respectability. We are to blame for not teaching more directly the unwritten law of ethics, for not imbuing our students with a horror of shabby dealing.

The fees of a professional man, in whatever profession he has started, must always undergo modifications according to the means of his patients. It is then in no wise discreditable for men practising among poorer neighbourhoods to accept low fees, provided they perform their work, and to the best of their abilities execute decent workmanship. But it is a very different matter when we find distinct "underselling" practised. It is customary for men whose social position or appointments, place them at least among those who are, or will be, teachers at public institutions, to make their tariff of fees consonant with those of the best professional men. It is certainly a great breach of professional etiquette for men in that position, to accept small fees, save in exceptional cases, and only drags the profession into the mire. Provided dentists give good work, evince skill, and are loyal to themselves and their patients' welfare, the public cannot object to high fees, indeed, such form a guarantee of the status of the dentist. Dentists need a more delicate conscience than even a medical man, they have their patients' members more entirely under their control, and can main and mar them without exacting much hostile comment. A surgeon who amputates an arm unnecessarily, is more liable "to get himself disliked," but a dentist we know he is a *rara avis*! who may remove a tooth unnecessarily, and his despoiled patient will go away congratulating himself upon losing an unruly member. No calling needs a keener sense of honour than dentistry, an upright member of that school is indeed a Phillip, and we are proud to think there be many such. However, where the shoe pinches is not that the profession is not upright and honest, but that the public cannot recognise the upright ones. Gulled by specious advertisements, they imagine that honest fees are exorbitant, and the starveling sums charged by men whose work would be dear at any price, are

more genuine because imposing less strain upon their pockets. The outside world knows nothing of the toil and intense physical labour incident to the dentist's calling, work which may prolong his patients' life and spare him the hideous torments of a life-long martyrdom to dyspepsia. To teach the public the true value of their services, should be the aim of the profession, and to effect such an end, uniformity of fees in the large towns should exist, and anything like underselling, which is really a kind of advertisement, must be put down most stringently.

ANNUAL DINNER OF THE PAST AND PRESENT STUDENTS OF THE NATIONAL DENTAL HOSPITAL.

The dinner this year possessed peculiar interest. The Chair was taken by Mr. Oakley Coles, who was supported by Drs. Morrell Mackenzie, Stephen Mackenzie, Mr. William Rose, Mr. Parkinson, Mr. Smith Turner, Dr. Cunningham of Cambridge, as well as Mr. Stocken and Mr. Weiss on behalf of the staff. Mr. Weiss in proposing the Chairman's health, took occasion to notice in well chosen sentences the loss sustained by the profession by Mr. Oakley Coles' retirement in order to devote his energies to studying for Holy Orders at Cambridge. In spite of the shade which the severance of close association for over twenty years between Mr. Coles and those present naturally cast over the proceedings, the evening was highly successful. At the close, various songs, recitations ect. were rendered and proved highly entertaining.

AN OLD VULCANITE PLATE.—Dr. Watt narrates in the *Ohio State Journal* the following:—In August 1856, the American Dental Convention met in Hope Chapel, New York. Amid a group of dentists outside of the chapel, before the meeting was called to order, we found an enthusiastic man, zealously advocating the introduction of a new kind of

dental plate, a specimen of which he was wearing. He would take his plate out to show it, put it back to answer questions, snatch it out again, and again return it, almost as fast as one could count the changes. We watched our opportunity, and then and there, amid a brief interview, we got our first sight of a vulcanite dental plate. At the same time we made an arrangement with him to pack and vulcanize a plate for us ; and we fitted the teeth, antagonized them with the patient's under ones, sent the case to our newly acquired friend, who made the mould, packed and vulcanized, and sent the denture to us by express. He told us that there were but two dental vulcanizers in America at that time, one in New Haven, and the other in New York ; and he stated that ours was probably the first vulcanite plate made for practical use west of the Alleghenies. The plate was worn, and constantly used something over sixteen years.

THE MANIPULATION OF RUBBER.—When you are vulcanising a rubber plate which you have *packed* with such care to produce what you suppose the necessary pressure, just put a piece of the sheet on the top of your flask, and see if it “swells and becomes porous.” All the pressure necessary in packing the flask is to be sure the rubber reaches all desirable parts. This is the advice of the Editor of *Items of Interest*, who avers that rubber so treated will not swell or become porous or in any way misconduct itself. *Fiat experimentum.*

A FRESH DENTAL STUDENTS' SOCIETY.—We have before us the rules of the recently-formed Edinburgh Dental Society. We welcome with pleasure the formation of this society, and we do so because we believe that those students who attend the meetings held among such societies can, if they choose, learn many lessons invaluable in after-life. This society, we have no doubt will be a success, there should be plenty of intelligent dental students in Edinburgh who will give that amount of vigour and infuse that amount of life and gusto into this society which is requisite for its success. The society has our hearty sympathy and well wishes.

THE GUERDON OF GREED.—“A terrible retribution overtook a south Bend hen that imprudently swallowed a false tooth that dropped from the mouth of the old lady that was feeding it. Its head was cut off, and the false tooth had its revenge when it helped masticate the creature that had but a few hours before masticated it.” We are indebted to the *Dental Register* for this touching narrative !

A FILLING FOR NERVE CANALS.—Filling nerve canals with a mixture of pulverized animal charcoal and a small quantity of iodoform has proved useful in the hands of Dr. Davis, he writing in the *Cosmos* recommends, take pulverised animal charcoal, one drachm ; iodoform, powdered, five grains ; mix them thoroughly. Where a molar with devitalized nerve is to be filled, apply the rubber-dam ; prepare the cavity thoroughly ; cleanse the pulp cavity and canals, where the canals can readily be cleansed, or are large enough to admit a broach. If desirable, the canals may be partly filled at the foramen with tin-foil. Next, introduce enough of the carbo animalis to completely fill the canals and pulp cavity. Over this fill with oxyphosphate ; and lastly with a permanent filling material. The carbon is left perfectly dry in the centre of the tooth. Where the tooth is not in a chronic ulcerated condition, and there is no soreness, the entire operation can be done at one sitting. Powder can best be introduced into upper molars by filling a small glass or rubber-tube and using a small stick as a plunger to force the powder up into place. He does not notice any discoloration in the molars.

HELENINA AS AN BACTERIACIDE.—The active principle of *Inula helenina*—Elecampane—is termed helenina. It has enjoyed a somewhat chequered reputation in Spain as a medical drug, but more recently has grown in favour as an antiseptic. From experiments instituted by Dr. Korab of Barcelona and published in the *Boletin Farmaceutico*, it would appear that helenina 1 in 10,000 stays putrefaction. In some cases solutions of a greater strength were needed. As a germicide helenina was found potent against the bacteria of ordinary infusions and also the tubercle of tuberculosis.

Abstracts of British & Foreign Journals.

CORRESPONDENZBLATT FUR ZAHNARZHE. UPON THE USE OF COCAINE.

Professor D. W. MILLER, Berlin.

After the subject of the use of Cocaine in dental practice had been deliberated upon in the Ophthalmological Societies meeting at Heidelberg in 1884, Dr. Miller made several experiments in the treatment not only of the gums but also of sensitive dentine, with hydrochlorate of cocaine, both in his private practice and also at the Hospital of the Dental Institute.

At first a solution of 4 per cent. was used, later on 30, and sometimes even a stronger solution.

The application of cocaine to the affected gum before laying on the copperdam proved very advantageous; in cases in which it was necessary to cut into the gums and in operation upon a deep set abscess, the Dr. found this method was tedious and superficial, and where dentine is very sensitive was uncertain in its effects.

In such a case as the last it is preferable to use a small wadding pad, soaked in a solution of carbolic acid, to which is added some morphine acetate, this is laid on the part affected and covered with Fletchers Artificial Dentine by which the overflow of saliva will be prevented. This pad can be allowed to remain in the cavity from one to eight days, sometimes longer, in consequence, the dentine will become in a great degree less sensitive and later the patient can undergo the preparation of the cavity without feeling any pain, and the operator performs his part without any undue anxiety. In rendering the dentine less sensitive before the preparation of the cavity, it is well to use Fletchers Artificial Dentine on account of the ease with which it is applied and also because by its use any injurious moisture is effectually prevented.

Dr. Miller asserts that as far as cocaine itself is concerned the results of its use in his case were not sufficiently brilliant to induce him to make much further use of it. Some time ago Messrs. Brunton of Leeds, sent Dr. Miller a consignment

of citrate of cocaine, with the request that he would make some experiments with the same and make known the results in the *Correspondenz Blatt*. The first attempt was eminently successful. The operation was the excavation of an extraordinarily sensitive tooth which must be attended with great pain. The cocaine was applied and in the course of six minutes all sensitiveness was destroyed, so completely was this the case that the tooth was excavated without the patient suffering the slightest pain.

But it was only in some few cases that a like happy result was attained, in many the desired effect was much slower in coming, and in some it was necessary to repeat the application several times by which much time was lost. In a few cases the use of this method caused so much pain to the patient as to bring tears to their eyes, and in others it produced no effect whatever. Although uncertain as to what kind of teeth were most affected, Dr. Miller is inclined to think the effects of the cocaine were less on hard firm teeth than on those of a softer and more porous structure.

For the purpose of destroying the sensitiveness of the gums preparatory to the application of copperdam, the use of cocaine is decidedly to be recommended. For the extirpation of pulp, particularly if inflammation exists, the effects of cocaine are every slowly obtained. A patient of Dr. Miller consulted him a few days ago, concerning the right upper middle incisor the crown of which was broken off, the pulp lay exposed, and was considerably inflamed. It was necessary to apply cocaine repeatedly for three quarters of an hour before the sensitiveness was destroyed sufficiently to be able to remove the affected part without causing the patient pain.

It is possible, where the pulp is exposed and not too much inflamed, to remove the whole pulp in one sitting, that is to say should circumstances be favourable, without causing the patient any suffering, but it is best not to venture upon this unless in cases where it is difficult for the patient to come a second time. For ordinary cases Dr. Miller prefers arsenic paste, the dangers of which have been over estimated, but the use of which needs only precaution and careful consideration.

Dr. Miller is no enthusiast in the subject of the use of cocaine either in cases of sensitive dentine nor the extirpation of pulp, and makes use of it only in such operations as can be completed at one sitting, when the patient can come a second time time he considers the above method preferable.

THE INDEPENDENT PRACTITIONER.

GOLD AND TIN COMBINED AS A FILLING MATERIAL.

By A. W. HARLAN, M.D., D.D.S., Chicago, Ill.*

The causes of dental diseases and their appropriate treatment have engaged much attention recently, also there have been papers on dental education and legislation, and some microscopical work endeavoring to clear up disputed or unsettled facts in dental histology. These have largely overshadowed the practical subjects. Filling teeth for a long time to come, will be the chief occupation of all dentists. The writer assumes that gold is, of all material now in use, the best substance with which to fill the majority of teeth that need to be filled, but it is not practicable to use it in all cases.

This is because—

1stly, inability on the part of the patient to pay for such fillings.

2ndly, lack of physical strength to endure protracted operations.

3rdly, the impossibility of making fillings uniformly good for the young, the aged and the weak.

4thly, recognition of the fact that, even though such fillings were always made, they could not be considered permanent on account of the habits, age, or condition of the patient.

5thly, the absolute folly of filling teeth with gold for the majority of children under the age sixteen or eighteen.

6thly, the certainty of failure to accomplish the desired object, with certain teeth, at all ages beyond the period of childhood.

In some cases experience demonstrates that other materials will be better suited than gold. What then should be used in such cases. We have amalgam, tin, Robinson's fibrous

material, gutta-percha, oxy-chloride of zinc, oxy-phosphate of zinc, and one other combination of metals, which has not been largely used—gold and tin.

Amalgam, the writer says should be used very sparingly, and only in out-of-the-way places, or in the crowns of large molars; in proximal cavities of bicuspid or molars, where the teeth are closely in contact, he believes amalgam is bad. It is permissible when the cervical wall is well covered with tin or tin and gold. It should not be used in buccal cavities alone, but only where the crown cavity extends through the buccal wall. Use as little as possible between bicuspids. It is generally safe to use amalgam on the proximal surfaces of teeth when the adjacent tooth has been lost. Never use it in a tooth which has been filled with gold, unless the fillings are in contact. Beneath large gold fillings, where the teeth have become carious under such fillings, it is just as easy to use tin.

Tin may be used on the buccal surfaces of teeth, and for filling a quarter to one-half of a cavity on the proximal surface of a molar or bicuspid, and for filling cavities in temporary teeth. It may be used in crown cavities in children's permanent molars, and pretty generally for crown cavities in third molars. It is admissible to use it in palatal cavities of incisors, and occasionally in proximal cavities in the same teeth, where not exposed to view.

Gutta-percha may be used as a rule, in deciduous teeth, but in the permanent teeth it is seldom a permanent filling. It disintegrates on the buccal surfaces from want of proper care. It long withstands mastication. It is less durable for repairing gold fillings than tin. In incisors on the posterior surfaces of the second molars when the third has been extracted, it may be used.

Oxy-chloride of zinc should only be used in pulpless teeth, as a filling material, and covered with gutta-percha, or a metallic filling. Do not use it in deciduous teeth.

Oxy-phosphate of zinc, as a filling material, cannot be depended upon for permanency. It is useful as a capping material, and for setting artificial crowns. It may be used in the deciduous teeth, and in the first permanent molars, from

the sixth to the ninth or tenth years. It can be used in the crowns of molars with or without living pulps, but covered with metal. Oxy-phosphate for proximal cavities in incisors, is less irritating. As a permanent filling it is not wholly reliable.

Tin is better, tougher and easier to work under the instrument, and not so liable to turn inky black as is Robinson's metal.

The writer then explains his method of using tin and gold in combination. Six instruments are needed, with large wooden handles. They are well serrated, and are mostly wedge-shaped, or three cornered, having suitable angles, so that all classes of cavities may be reached by them.

Gold and tin is best prepared for use by folding whole or half sheets of No. 4 of each metal with a spatula on a square of spunk, or other suitable material. The cohesive gold should not be used. It may be folded many times. The gold may be on the external or internal surface, or folded so that one-half of each metal is exposed. The gold or tin is exposed to the surface, makes no difference. Cylinders are made from the strips in such sizes as are desired. Ropes are made in the same manner that gold ropes are—the gold inside or out. They should not be cut into very short pieces, as time is gained by using longer ropes. Gold and tin, when used, should be introduced into cavities not entirely by the wedge principle, lest it might be cut up. For crown and buccal cavities, one piece of rope or folded metal only is needed. The middle of the ribbon or rope should be grasped by the pliers, and after reaching the bottom of the cavity the ends should be worked in, one at a time, until the cavity is completely filled. Burnish and finish in the usual manner. For proximal cavities, either cylinders or ropes should be used, as the cavities are more easily and satisfactorily filled by these forms of the combined metals.

This combination is especially valuable on account of its density, non-conductibility, and non-shrinkableness. It is easily inserted and takes a fine polish. The chloride and oxide of tin are antiseptic, which is an additional advantage. When it is desirable to economise for patients, this combina

tion may be used in buccal, crown, and proximal cavities of molars and bicuspid, generally as far forward as posterior proximal cavity in the first bicuspid. When not exposed to view, it could be made use of even further forward towards the mesial line. If the ribbons or ropes are of sufficient length, these fillings are capable of resisting mastication in an astonishing manner. In the majority of cases, where it is manifestly improper to use gold exclusively, gold and tin may be used as quickly as amalgam, and the operator has no fear of there being a leak afterwards. In addition to this, the filling may be finished at the same sitting. Care must be exercised in introducing such fillings, to prevent the point of the instrument from chopping up the material. A little practice out of the mouth will be found advisable.

MONATSSCHRIFT DES VEREINS DEUTSCHER ZAHNKUNSTLER.

A LOWER JAW TOOTH PLATE WITH "STUFFING."

A. WOHLER, Berlin.

Herr Wöhler gives an amusing account of his manipulations, in an effort to procure for one of his patients the coveted possession of beauty for ever. This patient, a lady, had reached the mature age of forty and enjoyed perfect health, but, Herr Wöhler remarks, her calling in life demanded perpetual beauty, and alas, her countenance began to evince signs of approaching age. The lady already wore an incomplete tooth-plate containing on either side two bicuspid and one molar, but in spite of this, the lower half of the countenance showed a strange inclination to fall in, thus making the chin too long and too pointed for the rules of beauty. Permanent blowing out of the cheeks is, Herr Wöhler remarks, apt to become wearisome when continued for any length of time, and to wear two indiarubber balls indelicate. So after various attempts to rectify the defect, the patient decided upon applying to a dentist for help or advice upon the subject. She went to Herr Wöhler to whom she unfolded her trouble, and requested him to prepare a new

tooth-plate for her, and added also she would like some "stuffing" or "padding," as she called it, to be placed on the cheek sides of the plate, hoping thereby to remove the above mentioned defect for ever.

An appointment was made to see the patient the following day, and Herr Wöhler turned his attention to the all important subject of the "stuffing." Of the size and shape required for this, he made a model in wax, which was very successful, and caused the patient's countenance to assume the satisfactory appearance of a full moon on a winter's night, thereby, procuring Herr Wöhler much lively gratitude.

The setting of the plate was successful, and fulfilled its aim perfectly, but when it came to filling up the voluminous spaces, Herr Walter was suddenly faced by a spectre, horrible to see, because on its forehead was written in letters of fire the word, fraught with terror and anxiety to every tooth artificer, POROUS. But as in critical moments help is often nearest, so was it in this case, for it suddenly occurred to Herr Wöhler that the largest spaces might be filled up by means of metal bars, in order to reduce the stiffness of the caouchouc. Confirmed in this idea by the remembrance of having read of under plates being filled with metal with the obtaining greater firmness in the setting, Herr Wöhler hammered four little bars out of English tin of about $1\frac{1}{4}$ ctm. in length and $\frac{1}{2}$ ctm. in diameter, and packed two of them on each outer side of the tooth-piece, embedding them thoroughly in the caoutchouc, thereupon the pressure upon the mucous membrane being somewhat lessened, soft remaining caoutchouc was laid underneath.

The plate came out of the vulcanizer safely, after careful elaboration it looked beautiful, and was worn without the least inconvenience. Not only is it perfectly satisfactory from an æsthetic point of view, but, from its weight (30 grains) ensures the firmer establishment of the tooth-plate hitherto worn without "padding." The cheeks are round, youth is ensured.

DENTAL NUTRITION.

By J. R. WALKER, D.D.S., New Orleans.

Dr. Walker observed that persons coming from districts in which the potable water contained abundance of lime to

those where calcium salts were deficient, suffered from softening of their teeth. He believed this showed that there is a nutrient circulation in the tooth substance.

Where teeth were rapidly decalcified, there must be a means of carrying off the waste material; where teeth were hardened and recalcified by proper diet and proper treatment, necessarily there must be a means of bringing to all parts of the tooth the necessary elements for recalcification.

The microscope has shown this to be the fact. From the *tubuli* of McQuillen, the *fibrillæ* of Cutler, down through all the more recent discoveries of Bodecker and others, the facts have forced a continual change of position. Prof. Frank Abbott, in a paper read at Minneapolis, describes "the distribution of living matter in tooth-substance, even in the interstices separating the subdivisions of the enamel rods, thus raising the enamel itself to the dignity of living tissue instead of a mere mass of calcareous elements;" and establishing completely the claim that the whole tooth is living matter, and subject to continual nutrient action.

Teeth that are soft and "chalky," being deficient in calcic elements can, the writer avers, be rendered hard and strong by appropriate treatment. He directs that plain lime water should be used, and says it will be so decomposed and reorganised within the system as to harden and reconstruct poor, soft, chalky teeth.

Proper diet is a valuable adjunct in this work, but diet without lime water in these extreme cases, even the most faithful adherence to whole-wheat flour, oatmeal, etc., will not produce the results sought.

A wide and prolonged experience of the use of lime, leads the author to state positively that it is most valuable in such cases.—*Independent Practitioner*.

Literary Notices and Selections.

A FACTOR IN TOOTH-PRESERVATION.

By NIERCE, D.D.S., Philadelphia, Pa.

Our next illustration we take from the common leech. We are all familiar with the manner in which this articulate makes its wound. The animal has three jaws, which are simple

semi-circles, and are armed with teeth or denticles, not for mastication, but for cutting the flesh of its prey, and making a wound from which the animal draws the blood upon which it lives. It shows the adaptation of teeth to the necessities of the animal. Among the intestinal worms, I may instance the tape-worm. You all know how difficult it is to dislodge this disgusting parasite from the alimentary canal. It has a circular mouth, armed with little hooks, which seize hold of the walls of the alimentary canal, and hold fast while the animal sucks the juice upon which it subsists. In that way these hook-shaped teeth aid the animal in obtaining its nutrition.

Then we come to the mollusks, of which the varieties described may be numbered by the thousand. We may divide them into two classes, those with and those without heads. The headless ones have, of course, no teeth; while the food habits of some with heads are without the necessity for teeth, and hence they are edentulous. But in those that have teeth we find the variety in shapes corresponding with the difference in diet; so as the little mollusk lives upon vegetable, animal or liquid food, the teeth quite as readily correspond to its necessities as do those of the vertebrate series to theirs. So in these, again, we have this selective influence of function, giving us structures in these plastic animals which are as fully adapted to their needs as are those enjoyed by the higher animals — *teeth modified in shape, substance, and arrangement by food habit*. The different materials upon which the teeth are required to act and the different movements of the tissues in which they are implanted tend to produce that peculiar shape and structure which is most efficient for their nutrition.

Passing to the vertebrata, we have a large class of vertebrate animals whose teeth we know have been either modified or wholly lost by reason of changed food habits. Birds to-day have no teeth, yet Professor Marsh, of Boston, has described some fossil birds which were furnished with well-developed teeth like those of other vertebrates. There is an immense variety of fishes, which are placed by Professor Marsh in five great classes: the leptocardia, marsipobranchii, elasmobranchii,

ganoidei, and teleostei. The first of these, described by Haeckel as the acrania (without a skull), have no teeth, while the others have almost an endless variety. The marsipobranchii, of which the lampreys are examples, have pointed, horny teeth. The elasmobranchii, embracing the rays, saw-fish, sharks, etc., have teeth with sharp points peculiarly adapted to their habits of life; and so on throughout the whole series, furnishing a greater variety of tooth formation and attachment than any other class of animals.

Before leaving the fishes I want to direct your attention to this little toad-fish which I hold in my hand, We find the body covered with spines, and a similar one in each jaw, except that their location has given them a different function, and they have become modified by virtue of it. This is an illustration of the dermal origin of the teeth, and is equally well shown by a newly-hatched dog-fish, where at this age you can scarcely distinguish the spines located on the jaw from those on the dermal surface. These, becoming modified by function, soon present a different appearance.

Next we come to the reptilia. They have but few teeth. A poison-fang is remarkable for the peculiar arrangement for conducting the poison into the wound made by it. It would be much like taking an ordinary tooth, with the enamel and dentine on it, and rolling it out flat and doubling it upon itself, the pulp cavity occupying its normal position. In folding it over we get a semi-canal connected with the sack of poison-fluid at the end of the root. The direction of the tooth is horizontal when at rest, but when elevated to pierce the prey a membrane is drawn over this semi-tube, so that it makes a complete canal, and as the animal strikes its prey the pressure upon the sack at the root ejects the fluid through the canal into the wound made by the fang. Another peculiarity is that we have an endless succession of these fang-germs, so that when one is lost another is developed in its place. This is true of nearly all the fish series—where teeth are lost by violence or injured by wear, new teeth soon take their place.

I have here a peculiar specimen, which represents the edentata or insectivorous animals, an ant-eater, which is deficient in front teeth. The molars it has are little round pegs,

made of dentine without enamel. The front teeth are deficient, yet in some of this group there is a lateral incisor, and in nearly all there are germs of both lateral and central incisors. They have not been developed for generations, yet the germ being present, represents the original idea and form of development, although it is aborted. Loss of function has greatly modified the teeth of this animal; the relegation to the tongue of the function of the incisors has made those teeth no longer necessary; hence they have disappeared, only the germs remaining to indicate the former type. The posterior teeth, having no hard substances to grind, have wholly lost their enamel; they are specialized for the service of the animal. This is not the true armadillo, although allied to that family.

As teeth are specialized by function and adapted to certain kinds of food, they are usually reduced in number; so, also, as we go up in the scale of intelligence from the lower to the higher, increased brain development seems to have a similar influence, the ancestral animal usually having had a greater number. Relegation of function brings diversion of nutrition.

Next in order comes a class of aquatic animals, which includes the sirenias, or sea-cow, an herbivorous animal living in the water, and which is furnished with molars adapted to its diet. To this class of aquatic animals belongs also the spermaceti or sperm-whale, whose teeth are strong and cone-shaped, giving us the idea of prehensile use, and ranging in size in correspondence with location in the jaw, the heavier ones being located nearer the articulation. Its prey is seized and swallowed whole.

In the mysticetus, or right whale, *balænoidea* (the largest mammal), we find a set of teeth in embryo, but they are ill-formed and bad before birth. At birth, in place of teeth are developed thin plates that run transversely across the jaw, some two hundred in number, and varying from ten to twenty feet in length. These great plates, which furnish the whalebone of commerce, are attached to the upper jaw, and form a sort of fringe on the lower edge, in which, as the animal swims through the water with open mouth, thousands of small, jelly-like animals which abound therein become en-

tangled. The water being expelled, these are transferred to the œsophagus of the whale and become its food. These plates are an adaptation of teeth specialized to the needs of the animal and serve it in its nutritional demands.

In the quadrumana, embracing the lower monkeys and lemurs, we have teeth for crushing fruits—tubercular teeth, and very closely allied to those of the human family, but somewhat different in form, and in some greater in number, the cuspids being more prominent and serving the males for weapons in combat.

Then we come to the anthropoidea, a group that embraces man as well as the higher apes. This group has teeth alike, save in the prominence of the cuspids ; but in this ascent in the scale towards man we lose some of the teeth, the lemurs and lower monkeys having thirty-six, while the anthropoidea have but thirty-two. And it is a question worthy of consideration whether the frequent absence of the third molar in the human family is not in the same line of reduction ; absence of function sending the nutritive current to other localities.

It is probable that, with a continuance of our present diet and manner of living, it will not be many centuries before man will have twenty-eight instead of thirty-two teeth. It is also probable that this reduction will be facilitated by the effort of specialization, which is constant.

Man is an omnivorous animal, and in his mode of living his teeth are not subjected to the use or kind of diet which is best calculated to insure their health. If we had the opportunity of examining any large class of people who were now and had been for some centuries confined to a limited diet, with little or no animal food, we should expect to find incisors well developed, cuspids somewhat suppressed, and molars assuming a more herbivorous type, having cutting tubercles, and showing a tendency to the infolding of the enamel.

We do know that during the period in this country when the negro of the South was confined to a coarse diet he had fine incisors and strong molars. His cuspids were not more prominent than is seen in the higher races. This we should attribute to the fact of his diet being largely granivorous and coarse. You know that in all strictly herbivorous animals

the cuspids are either entirely deficient or are merely present in a transitional form.

The carnivorous animals, whether aquatic, terrestrial, arboreal, or fusorial in their habits, or whether occupying the polar or equatorial regions, are alike true to their cuspids and carnivorous molars—illustrating again the influence of food habit.

The rodentia, of which this beaver is a very good type, have finely-developed incisors growing from permanent pulps, and molars with transverse lines of enamel. These forms are the result of the gnawing habit which necessitates the antero-posterior movement of the mandible. Accompanying this is also the peculiar arrangement of the three hard tissues of the teeth, which always gives the incisor a sharp, cutting edge, by placing the enamel, which is most dense, on the external or labial surface ; the dentine next ; and the softer tissue, not unlike cementum, on the internal or palatine surface.

Now, Mr. President and gentlemen, I might continue these illustrations through every modification of the animal kingdom, and show you that, whenever there is a differentiation in the food habit, there is a corresponding one in mandibular movement, which is accompanied by a tooth-formation resulting therefrom, and that the condylar attachment or articulation is so constant and true to the mandibular movement and tooth-form that, when once recognised, there would be no difficulty in describing the movement of jaw and tooth-form belonging thereto.

In recognising the conditions which induce morphological peculiarities and modifications in dental structures, we certainly have some light thrown upon a condition which might induce tooth-degeneration—in the one case functional activity, followed by healthy nutrition ; in the other, functional inactivity, or the absence of function, followed by diversion or relegation of nutrition to other localities.

In conclusion, gentlemen, let me once more impress upon you the importance of the influence of function as a prophylactic agent, and suggest that, in our duty to our patrons, we can render them no better service than by enlightening their understanding to this extent.—*Dental Cosmos*.

THE EARTHY PHOSPHATES.*

By DR. W. C. BARRETT.

The administration of the earthy phosphates to pregnant women and to young children has been a favourite prophylactic method of treatment with many intelligent dentists. The theory upon which this system was founded is, that decayed or defective teeth owe their condition to trophic disturbances, and that it is but necessary to supply the elements missing to produce perfect dentures. This theory is a very plausible one, and it gives loquacious practitioners excellent opportunity to enlarge upon the wonderful process of gestation, and the marvellously interesting double function of the expectant mother, whose digestive apparatus must furnish, not only pabulum to sustain her own physical being during a trying period, but sustenance to the foetal man or woman which she carried beneath her heart. If her own teeth decayed during this period, because of the neglect which at such times is common, she was perhaps treated to long dissertations upon the imperative demands of the growing contents of her uterus, which, not finding the earthy elements needed in the blood with which she supplied it, was robbing her own osseous system to supply its wants. If her teeth were found to be soft, it was because their character had changed, and the lime salts of their crystalline structure had been taken out to build up the young child. Corroborative evidence, when looked for with biased judgment, was not lacking, and dentists had many tales to relate of the most stupendous changes effected in the dental development of children through a judicious administration of the lacto-phosphate of lime to the mother during pregnancy. The instances in which such results seemed apparent were cited, while those in which no effect resulted were not included in the category, or were attributed to a want of faithfulness in taking the prescription.

We believe that which we desire to believe, and there is no difficulty in finding apparent confirmatory evidence to sustain the most absurd of postulates, when one sets out with a determination to do so.

* Abstract of a Paper read before the American Dental Association at Minneapolis, August, 1885.

There is probably no one who has followed the prescribing of the earthy phosphates for a supposed dystrophic condition, who will not, if his memory be sufficient and his data perfect, call to recollection very many complete failures. If he shall have traced the after-history of children born of mothers who, during pregnancy, were subjected to the phosphatic treatment, he will probably find quite as many with defective teeth as in those who were born under other conditions.

Earlier in my own professional history, I experimented with the different preparations in numerous cases. One of the first of these was that of a lady pregnant with her second child, the first being in a deplorable dental state. The seeming results were surprising. Not only was her own gestation much more pleasant and easy, but the dentition of her infant was almost entirely without the usual febrile disturbances, and the child's teeth, up to the time when I lost sight of him through the removal of his parents, presented a remarkable contrast to those of his elder brother. This case would have possibly confirmed me in the use of the phosphates, were it not that about the same time I had contrary experiences.

In one notable case, that of a lady pregnant with her fifth child, I persuaded her to a thorough course of my then favourite remedy. All the other children had excellent teeth, much above the average. There was no special reason why she should be subjected to prophylactic treatment, except that I thought I saw disastrous effects from her condition upon her own teeth, and because I was pushing the investigation with strong hopes that I had hit upon means by which a perfect dentition might be assured to every child. As time rolled on I beheld the direct antithesis of the first cited case. The child had all manner of difficulty in getting its teeth, and when they were in place I saw, to my confusion, the only really bad dentition in the family. Of all the women whom I subjected to this treatment, there was not one in which the experience of the lady of the first instance was repeated. Experience alone led me to entirely abandon the practice, and, when, subsequently, I made a more thorough study of the physiology of nutrition, I became confirmed in my scepticism concerning the utility of the feeding of phosphates to

pregnant women, or even the indiscriminate recommending of such foods as are particularly rich in earthy materials. The facts are against it.

A few years since it was common to hear denunciations of the use of fine flour, from which it was declared that the miller had eliminated all that was of use in the building up of the bony system. Elaborate papers have been read before this Association, in which it was demonstrated to the satisfaction of the really thoughtful and honest essayist, that the decay of teeth, which was supposed to be a modern disease, was due to the lack of phosphates in the fine flour that formed the chief article of subsistence. Since then, computations have been made of the amount of bone-making material that is needed by both mother and foetus during the period of gestation, and it has been demonstrated that should she subsist entirely upon this article of diet, there would still be an excess of the lime salts. It is a fact that during pregnancy there is almost universally a continual elimination of these principles, which are easily traced in the excretions. Any man, or pregnant woman, who lives upon almost any diet that is sufficient to sustain life, will, if the nutritive organs be in proper condition, find more than is necessary of these elements to keep the osseous system in good condition. It must be remembered that the nutritive changes in the bones and teeth are less than in the other tissues of the body, because they are more permanent in character and structure. Especially is this the case with the teeth, in which the trophic changes are very limited indeed. That such a dystrophy may exist as shall materially affect these organs, no one will probably deny; but the process will of necessity be but a slow one, and the changes will not soon be manifest.

And now let me detail some of the physiological reasons why the giving of the earthy phosphates for nutritive purposes must be a mistaken treatment, and why, to my conception, it is founded upon erroneous assimilative views.

All pabulum must originally be derived from the earth. That is the primal source of all nutritive material. But there is no order or class in the animal kingdom that can

elaborate it. There is no animal organism that can derive nourishment directly from earthy matter. That function rests solely in the vegetable kingdom. Animals are not primal organisers. They cannot digest the inorganic. They require organic structures for their food. But the study of vegetable physiology shows that they have the ability to assimilate inorganic matter, and out of earthy matter to organise tissue that may serve for the food of the higher orders. When matter has once been organised into vegetable products, it may serve for the sustenance of animals. Some of the animal kingdom subsist upon matter but once removed from the inorganic. To this class belong the graminivora. Others of the animal kingdom require that their food shall have been twice organized ; first from the earth into a vegetable form, and again by an animal into a higher form. To this class belong the carnivora, who cannot digest or assimilate vegetable organisms until they shall have been reorganised into an animal.* Others are omnivorous, and their digestive apparatus will prepare for nutrition matter that has been but once organised into vegetable life, or that has been again organised into animal existence. To this class belongs man. But neither he nor the graminivora can make nutritive use of inorganic matter, any more than can the carnivora. It follows, then, that if inorganic matter be introduced into an animal organism, it is entirely foreign, and must be eliminated in an unchanged condition. If it remain within the system, it is essentially and must remain a foreign substance, an irritant that, if not promptly ejected, will create internal disturbances of a more or less serious nature. All inorganic matter, then, is foreign to the animal system, and so far as nutrition goes it is not only entirely useless but absolutely mischevous.

Some of the proximate principle of animal bodies are made up mainly of inorganic material, but they never exist as simple substances, unless we may call the iron of the blood

*It is a rather singular fact that most of the animals that require their food twice organised are unfit for food themselves- Their flesh is rank, unpalatable and innutritous. There are exceptions among fishes and birds, but of the mammalia, the flesh-eaters are themselves uneatable.

a principle. That exists only in a kind of solution, held there by the other constituents, and it is not assimilated directly. The calcium of the bones and teeth exists in combination formed within the system. Carbonate of lime and the phosphate of magnesia are not taken up as such, but the carbon, the phosphorus, the calcium, and the oxygen are elaborated within the organism, and their chemical union is there completed when they are built into the tissues. The building of this animal house of ours cannot be brought about by feeding brick and mortar. The raw material must be furnished in other compounds, which it is the province of the nutritive apparatus to disorganize, to separate into their constituent elements, and to recombine into tissues. Every particle of tissue principle must be elaborated within the body, and built up, not from compounds but from simple elements. If carbonate of lime be needed for the teeth, it is of no use to feed oyster-shells. The system will not take carbonate of lime, but it will elaborate the material from the calcium and carbon and oxygen, which it derives from food, and it will take its carbonate of lime in no other way. It is same with the phosphates, and hence the inutility of giving any preparation of that material, which will not serve as pabulum. So complete and perfect is this nutritive process in the healthy organism, and so universally and admirably are the elements provided in all organic matter, that a perfect digestion will find in any material that is fit for food, sufficient of the different ingredients to elaborate into pabulum for all the tissues.

Were not this the case, it would be impossible for the different races to exist under all the varying conditions in which they must live. The dweller in the hyperborean regions, where vegetable life scarcely exists, must make a subsistence almost exclusively out of an animal diet. But his whole system is as well nourished as is the omnivorous dweller in the temperate regions. There are those who live upon an exclusively vegetable diet, and none of the tissues are starved. Existence has been prolonged exclusively upon fruits, yet every organ was perfect because of this universal diffusion of the essential elements of nutrition. The simple

substances from which the compound tissues of the body are composed are comparatively few, and are found everywhere. Were it otherwise ; were it the case that the organism was unable to elaborate its compounds from the elementary substances ; were it the fact that carbonate of lime, and fluoride of calcium, and all the other compounds must be supplied as they exist, it can readily be seen that animals could not subsist upon a simple diet. It would be necessary to supply such as foods as contain the exact compounds needed, and this, except under the most favourable conditions, would be impossible. Hence, but a very small proportion of the earth's surface would be habitable, and most orders of animals would soon become extinct through inability to obtain the exact compounds needed for so complex a nutrition. The laws governing our existence are simple, if we would but consider them intelligently. Animal life can subsist upon almost any kind of organic matter, not absolutely poisonous, and yet be well nourished.

Inorganic matter does, however, play an important part in the human economy, but man is the only animal that makes such use of the inorganic world. Our medical pharmacopœia is largely made up of inorganic matters, and they are given to induce certain changes corrective of others, brought about by dystrophic conditions. If intestinal function ceases through the presence of innutritive or indigestible matter, an inorganic remedy may, by its presence, induce such violent peristaltic action as to eliminate the obstructive matter. Alterative effects follow the ingestion of some inorganic compounds, but it should always be remembered that such inorganic substances are entirely foreign to the organism, and are always extruded at the earliest opportunity. They form no part of the nutrition, and are never built up into the tissues.

It must follow, then, that the giving of the inorganic earthly phosphates for nutritive purposes is always a mistake. If they act at all, it must be remedially, and if they are used they should be intelligently prescribed, like any other agent, and only for their medicinal properties. I have no knowledge that they have any very decided medicinal virtues, and therefore I can see no excuse for dispensing such inert compounds.—*Independent Practitioner.*

Dental News.

GLASGOW DENTAL STUDENTS' ASSOCIATION.

FIRST GENERAL MEETING HELD 27TH OCT., 1885.

By O. FERGUS, ESQ., L.D.S., D.D.S., in the Chair.

The minutes of the preliminary meeting were read and confirmed.

Mr. Wallace, M.A., was proposed by Mr. John Biggs, jun., (Sec.), and seconded by Mr. Smyth. The meeting then considered the rules as suggested by the council.

Mr. B. Sutherland moved that the presidentship be held for two years.

The Secretary seconded. The Secretary then moved that the hour of meeting be 7 p.m. Mr. W. H. Woodburn seconded.

Mr. A. P. Sinclair moved that the hour of meeting be eight p.m. Mr. Stewart seconded. On being put to the vote, the secretary's motion was carried by a large majority.

Mr. Naismith moved "That papers may be read before the Society by any member of the Dental or kindred Professions, the subject having been announced at a previous meeting of the Society." Some discussion ensued as to whether such a rule was necessary, and, ultimately, Mr. Naismith withdrew his motion. With these, and a few other minor alterations, the rules, as suggested by the council, were unanimously approved of.

Mr. Woodburn, Mr. Smyth, and the Secretary were appointed as a committee to arrange for the inaugural dinner.

The secretary then announced that the council had much pleasure in stating that they had added to their list of councillors the names of Messrs. Sutherland and McCash.

The announcement met with great approval. The president then announced that Rees Price, Esq., had kindly offered to show the models illustrative of Dr. Coffin's system, and that

J. A. Biggs, Esq., had kindly consented to give a demonstration, on continuous gum work, in his own house, at a date to be fixed by the society. These announcements were received with great applause, and it was unanimously resolved to ask Mr. Biggs to fix the date himself.

The president also intimated that the Custodian had received the first donation to their museum, in the shape of a model with germinated teeth by J. A. Biggs, Esq.

The president then gave his address.

The meeting was then closed, the date of next meeting to be the first Monday in December.

THE EDINBURGH DENTAL STUDENTS' SOCIETY.

The first ordinary meeting of this Society was held in the rooms, 30, Chambers street, on Monday evening, November 2nd. Mr. Edwin A. Cormack, the President in the chair. Mr. W. Bowman Macleod, Honorary President, delivered an inaugural address, and Dr. Wilson read an interesting paper entitled "Some Points in Anæsthesia." In the discussion that followed Messrs. Munroe, Johnstone, and Purdie figured prominently.

DENTAL HOSPITAL OF LONDON STUDENTS' SOCIETY.

ORDINARY GENERAL MEETING, held Nov. 9th, 1885.

C. TRUMAN, Esq., President, in the Chair.

The minutes of the previous meeting were read and confirmed.

The President announced that the Society's Prize for the best paper read during the year 1884, had been presented to Mr. L. E. Sexton.

Messrs. Eskell, Miller, Robinson, Forst and Thomson, signed the obligation book and were formally admitted to membership by the President.

The following gentlemen were then balloted for, and elected members of the Society:—Messrs. C. R. Morley, W. J. McDonald, H. Stoner, H. Picton, J. H. Badcock, R. Oakland, J. A. Bairston, G. Parkinson, S. W. Peoley, G. H. Acton, S. E. Constant, E. Hodgkinson, C. W. Hendley, S. A. Goard,

W. G. Stoddart, H. Henry, E. Haynes, A. H. Smith, A. R. Colyer, I. M. Lucas, T. S. Rendall, and S. B. Wakefield.

Messrs. T. J. Boyton, and A. J. Cardell, were proposed by Mr Whittaker, and seconded by Mr. Lloyd Williams.

On casual communications being called for, Mr. Lloyd Williams shewed a case of Dentigerous Cyst, under his care, from which he had removed the lateral and canine. He also showed models of a peculiar form of decay, and irregularity of the permanent teeth. The curator announced that a set of very old scalers and a treatise on Dental Surgery published in 1835 has been presented to the Museum by Mr. Miller. He also showed a model of an odontome coronnaire occuring in the lower jaw.

Mr. Boyton presented a model of irregularity in position of the permanent canine.

Mr. England showed an exostosed root which had been causing acute neuralgia.

The President showed a supernumerary temporary tooth.

The President then called upon Mr. England for his paper on "Amalgams," which was listened to with great attention and elicited a lively discussion, in which the following gentlemen took part:—The President, Messrs. Rilot, Lloyd Williams, Colyer, Baldwin, Wrighton and Crocker.

A vote of thanks to Mr. England for his interesting paper was proposed by the President, seconded by Mr. Whittaker, and carried unanimously.

Mr. England then gave notice of his intention to move the following resolution at the next meeting:—That in Law XXXI. the words "on the day preceding the meeting," be altered to "at least 14 days before the meeting".

The President then announced that the next meeting would take place on Monday 14th December, when Mr. Baiston would read a paper on the "Sensibility of Dentine."

The meeting was then adjourned.

APPOINTMENTS.

Mr. W. H. KIRTON, L.D.S., R.C.S. Irel., of Southsea, has been appointed Honorary Dental Surgeon to the Gordon Boys' Home, Fort Wallington, Fareham, Hants.

VACANCIES.

DENTAL HOSPITAL OF LONDON, LEICESTER SQUARE.

The Committee have decided to appoint two Assistant Anaesthetists. Applications with testimonials, on or before Monday, 14th of December.

Correspondence.

We do not hold ourselves responsible for the opinion of our Correspondents.

To the Editor of the British Journal of Dental Science.

Sir,—Perhaps you will kindly allow me to say a few words in reference to some observations in the Journal on the use of gutta-percha for capping exposed pulps, and as a non-conductor under metallic fillings.

It is undoubtedly the case, that gutta-percha stoppings have, in many mouths, a tendency to swell and project beyond their original level. I not unfrequently noticed while engaged in practice, old gutta-percha fillings that had *bulged* more or less, and required trimming down; at the same time I met with numerous others in which no such appearance was observable. This difference may possibly have been owing to some variation in the character of the buccal secretions. I may mention that I frequently had occasion to employ gutta-percha stopping as a non-conductor under gold or amalgam; but I cannot call to mind any instance in which the unfortunate result mentioned in the Journal came under my notice. Indeed, it is difficult to understand how it could take place if the cavity had been properly dried and the filling made water-tight. The gutta-percha would not undergo any swelling as long as it remained dry; but, of course, it might do so if the fluids of the mouth were to gain access to it.

I very seldom used gutta-percha as a capping for exposed nerves, and cannot, therefore, say whether any mischief resulted from it or not; but we may well suppose that in

some at least, of such cases, non-success may have been due to other causes than the swelling of the gutta-percha cap.

I remain, Sir, Yours obediently,

HENRY LONG JACOB, M.R.C.S.

Tottenham.

GALVANISM FOR NEURALGIA.

Sir,—My attention has been drawn to a paragraph in this month's issue of your Journal, on the subject of "Galvanism for Neuralgia." The remarks you have made as to its efficacy, I can endorse but my object in writing is to point out that we have now in this country several makers of electrical instruments who manufacture batteries that are every thing that can be desired as to portability. Perhaps the most portable are those made by Messrs. Coxeter. The ones I have in use weigh only about 18 or 20lbs. and they contain 40 cells each. Much lighter batteries can be obtained which have a smaller number of cells. For the treatment of neuralgia these small batteries are very appropriate and useful, but every *desideratum* cannot be obtained in the same battery. If batteries are required to do prolonged work, or a high current strength is required to be maintained for a long time, large cells are necessary as the small cells so quickly become polarised. This is no drawback for short applications of electricity such as are required for neuralgia as the cells quickly recover themselves when at rest.

I often hear complaints from professional men concerning batteries, but the truth is that they expect too much of them. If a strong battery with high electro-motive force and low internal resistance is required it cannot be made in a very portable form. The most portable batteries to which I have referred as made by Messrs. Coxeter have also the disadvantage that they cannot be repaired by the owner but have to be returned to the maker. In other batteries less portable a damaged cell can be taken out, and a new one inserted in its place. A professional man in choosing a battery must be guided in his choice to a great extent by the kind of work he will require of it.

I am, Sir, Yours faithfully,

W. E. STEAVENSON, M.D. *Cantab*, M.R.C.P.
Electrician to St. Bartholomew's Hospital.

Nov. 17th, 1885.

A QUERY?

Sir,—When a vulcanite case is allowed to thoroughly cool in the vulcanizer, a coating of very hard plaster adheres to the vulcanizer which requires stiff scraping before it can be removed, and in the process the fine fit of the case is endangered.

Can any of your subscribers inform me the cause of this plaster coating new vulcanite, for it does not adhere to repairs? Why it is so hard? And if there is any substance which will dissolve or soften it, without injuring the vulcanite, so that it can be brushed off?

I am, &c.

GLASGOW.

AN APPEAL.

Sir,—I am in such distress as not to know how to get food, would you kindly bring my name and circumstances before the profession to see if something could not be done for me, to help myself by way of getting up a fund to put me in a little business, as I should be quite capable of carrying on if I had a little capital to begin with. Trusting I am not taking too great a liberty,

I remain,

Your obedient servant,

SEPTIMUS CROCKER.

For 17 years manager and traveller to the late Mr. W. T. Taylor, Dental Depot, Broad Street, Golden Square, and also with Messrs. G. Barth & Co., for 5 years, who will be happy to supply any further information and to receive subscriptions.

CORRIGENDA.

Title	Page 1038	For Faradisui read Faradism.
	Page 1338	„ Boynes „ Baynes.
	„ 1040	„ Deourt „ Devon.
	„ 1040	„ Spomer „ Spamer.
	„ 1040	After word existence a period capital P.
	„ 1040	„ <i>Presistent</i> read persistent.
	„ 1041	„ Apathic „ Apathetic.
	„ 1042	Line from 10 from bottom.

For British Dental Association read British Medical Association

British Journal of Dental Science.

No. 430. LONDON, DEC. 15, 1885. VOL. XXVIII.

A METHOD OF MOUNTING PORCELAIN CROWNS ON PULPLESS MOLAR ROOTS.*

BY F. H. BALKWILL.

MR. PRESIDENT AND GENTLEMEN,—

The antiseptic practice of treating pulpless teeth for filling has given us confidence in retaining pulpless roots. To utilize these for the support of a crown has been successfully performed by several methods, the best of which is a hollow crown of gold plate made so as to closely clasp any available portion of the natural tooth. But while the Richmond crown is efficient, it requires so much skill and time for its application that it must always be an exceptional operation.

In the crown which will be brought before you to-night the object has been to produce a plan comparatively easy.

Two principal difficulties are met with: first, the size, shape, and position of the roots of molar teeth forbid the use of stiff pivot wire to fix the crown. Secondly, as a fixed pin cannot be used, the crown must be in the form of a cap to hold a cement which is to retain and support it when hard; the difficulty is to keep the crown in place until the cement hardens.

Messrs. T. Lemale and Sons have produced a crown from my designs which meets these difficulties with some success. It is of porcelain, about the size and depth of an average natural crown; hollow, so that when placed upon a root, it

* Delivered before the Odontological Society of Great Britain, November 2nd, 1885.

rests upon a thin margin ; in the middle of this hollow, under the centre of the crown, is a second smaller chamber much undercut, to act as a cavity of retention. At the four corners of this cavity are four little cornices to strengthen the neck of the cement when packed in the cavity, by forming struts or buttresses. In the centre of the retaining cavity a thin, headed platina pin is fixed, which protrudes sufficiently from the surface of the crown when in place to reach to the bottom, or near it, of the pulp cavity in the natural root.

It is applied in the following manner :—

The root canals having been first treated and filled, and the margins dressed down with a flat file, level with the gum, the general surface of the root is ground concave with the burring engine. A model is now taken and sent into the workroom to be poured, and whilst this is being done, the operator proceeds to form the pulp cavity into a retaining chamber of as nearly as possible the same form as that in the porcelain crown. If the roots are large and advantageously placed, smaller retaining pits are drilled a short distance into them. A crown is now fitted on the model in the workroom, and readjusted in the mouth until it fits, root and bite. Should the platina pin be too long, it may be bent up a little or cut short and a fresh head of soft solder attached. Some Stewart's Sullivan's cement is now thoroughly well levigated, first in dilute sulphuric acid, and then in water for several minutes until it becomes very plastic ; this is divided into two portions, one of which is wrung in a napkin as dry of mercury as possible. The crown is then taken in the hand and some of the more plastic portion is well packed with suitable pluggers to fill the retaining cavity. The hollow of the crown is now to be filled with the drier portion, being well tamped around the pin to unite it with that first put in ; it is then packed up to the top of the pin and smoothed off so as to leave it in the form of a cone or pyramid. The cavity in the root, having been well washed and dried, is next filled with the plastic portion of cement, and then with a straight instrument a conical pit or depression is scooped in it to receive the cone of cement in the crown ; this is now put in and pressed in place, with a slightly oscillating, rotating motion, after

which the patient is directed to bite it into place ; the overflow is cleared away and the patient dismissed with a caution to regard the tooth until the next day as if it had a newly exposed nerve.

A weak point in this paper is that the crowns have not been worn long enough to give them a fair trial, the reason being that Messrs. Lemale promised not to put them before the profession until I had described them ; but I think the properties of the materials used are sufficiently well known to make a trial of the crown worth consideration.

I now hand round for your inspection—first, one of the crowns as received from Messrs. Lemale ; secondly, a root prepared to receive it ; thirdly, a root with the crown attached ; fourthly, a root to which a crown has been attached and broken off, leaving the cement as nearly intact as possible, for you to judge of its liability to fail from caries or weakness of joint.

I have used ten teeth in the following seven cases :—

CASE 1.—Miss G——n, age 22. Right second lower molar.

May 13th, root prepared.

July 8th, crown fitted.

(Model shown.)

CASE 2.—Mr. W——n, age 16. Right second lower molar, left first and second lower molars.

September 11th, roots prepared.

September 22nd, crowns fitted.

This case (No. 2) is an advantageous example of the use of such crowns, the boy having lost most of his masticating power, yet the roots being firm and strong with articulating upper teeth ; his mastication is by this means restored in great measure, without the burden of wearing a plate. It also illustrates how close a bite can be made with this crown.

(Model No. 2 shown.)

CASE 3.—Miss L——y, age 19. Right first lower molar.

September 22nd, root prepared.

September 26th, crown fitted.

September 28th, crown loose, having been bitten upon the day it was put in.

October 3rd, removed the crown, in which nearly all the cement came away, showing fracture at the neck in the cavity of the root. Reshaped cavity in the root and fixed a new crown.

October 14th, tooth all right.

This was the only case in which I have had a crown moved.

(Model No. 3 shown.)

CASE 4.—Miss W——e, age 25. First right upper molar.

October 9th, root prepared and crown fitted at one sitting, the pulp canals having been previously prepared and filled.

October 14th, tooth firm, could eat well with it.

(Model No. 4 shown.)

CASE 5.—Captain M——r, age 30. First right upper molar, masticating surface and mesial wall broken down, distal wall standing.

October 8th, prepared pulp canals.

October 13th, reduced natural crown diagonally from masticating surface of distal wall, to mesial cervical margin. Fitted porcelain crown by grinding diagonally to make up deficiency, and fixed it. Seen since, it is firm and useful. It seemed advantageous to restore contour in this case, rather than leave a diagonal surface, almost sure to be incommode by allowing lodgement of food. Unfortunately I omitted to take models of this case.

CASE 6.—Mrs. C——r. Right upper molar, outer wall of crown alone standing.

October 20th, prepared pulp canals.

October 23rd, fitted partial crown.

October 30th, crown quite firm and comfortable, allowing clasp of artificial plate to grasp it.

(Model No. 5 shown.)

CASE 7.—Miss H——n, age 19. First lower molar right and left.

October 20th, applied arsenic to pulps.

October 23rd, fitted crowns. This model is noticeable from the fact of there being a supernumerary tooth between first and second molars on each side.

(Model No. 6 shown.)

(To be Concluded.)

THE TREATMENT OF A CASE OF
IRREGULARITY.*

By DR. J. S. CRAPPER, Hanley.

MR. PRESIDENT AND GENTLEMEN,—

You will, I think, agree with me that any peculiar cases we may meet with in practice will be found interesting and instructive to introduce at our meetings, and being inspired by this feeling has induced me to submit for your inspection the models now before you, representing the mouth of a young man, who is now present, in order that you may have an opportunity of investigating the case. No. 1 model is that which I obtained two years ago when he first consulted me, and No. 2 model is that which I obtained on Tuesday last, when he kindly consented to accompany me to this meeting. In comparing the two models, you will see that the second molar right and the first molar left have been extracted, the wisdom tooth on the right having taken the place of the second molar, and the second molar left has come forward filling up the space formerly occupied by the first molar, and the wisdom tooth now occupies the position of the second molar left. You will see also that the lateral, in addition to the two supernumery teeth, was removed, making in all six teeth which I removed under the influence of the nitrous oxide gas. What I consider extraordinary is the remarkable change which has taken place after the removal of the teeth named without any artificial assistance. No doubt if a regulation plate had been constructed the whole arch would have been much improved, and the pushing in of the right central by the canine would have been easily prevented, but that irregularity can be corrected by wearing a small piece I have constructed for the purpose. It is only proper that I should explain that this young man did not give me a fair chance of making the restoration and improvement I wished, as his occupation in life prevented his coming to see me; in fact, I did not see him more than twice during the first year, and it was within that time the great change and improvement in his personal

* A Paper read before the Midland Odontological Society.

appearance took place. Repulsive as his expression was when I was first consulted, it was with him more the desire to be relieved of the excruciating pain he was then suffering from than any anticipation of having his appearance and general health so much benefited. You will observe he has erupted the full set of sixteen teeth in the upper jaw, and now No. 2 model shows he has only twelve, six in each half in place of eight, and yet he has as many teeth as the size of the jaw will admit. I have exhibited models of this case to several of my professional brethren who, owing in a great measure to the No. 2 model not being so perfect in showing the peculiar cusps of the molars, were disposed to think I might have mistaken the models, and one gentleman went so far as to suggest that I had removed the left canine instead of the lateral; however, he subsequently altered his opinion, but not as to his view of the model showing the cusps of the molar teeth, but, in order to prevent any further misapprehension, I decided to bring my patient before this meeting. One especial point I call attention to, is the fortunate juncture at which I was first consulted, viz., at the time when the wisdom teeth were developing; although it would have been preferable to have been able to give earlier attention, yet further delay would have been very injurious. In examination of his mouth, you will observe that his teeth are chalky in appearance, showing that they are not of perfect structure. The two laterals which I extracted had each a distinct chalk mark, and even if it had been practicable to preserve them for a time they would soon have been useless to him, so that I am convinced of the soundness of my original plan of treatment. Several who have seen the models have not hesitated to say that the canines would have been the teeth they would have removed, although when I explained the structure of the laterals their views coincided with mine. In all cases we know that it is most necessary to make a proper examination of the mouth, as no rule can be laid down which we can declare universal and each case must be studied, but overcrowding of the mouth in all and every case should have our best attention. In this young man's case, if he had not had the attention given him there would have been rapid decay

and entire destruction of teeth that will now be most useful to him. You will observe I have filled an upper molar for him with gold, and he will in time require further help in this direction.

THE MISSING INCISORS IN MAN. WHICH ARE THEY ? *

BY H. H. EDWARDS, D.D.S., of Madrid.

GENTLEMEN,—In presenting the accompanying drawings to your excellent Society, I will, with your indulgent permission, supplement them with short descriptions of the same ; also, if not trespassing too much on your valuable time—to say nothing of your patience—will endeavour, in as brief a manner as possible, to add a new argument to this highly interesting subject.

In the first place, allow me to publicly thank Mr. Wilson for having brought the subject to my notice, it being the publication of his able paper that set me thinking. Also, allow me to pay tribute to the courtesy of your present able President, for kindly arranging to bring my feeble effort before your Society.

DESCRIPTION OF CASES PRESENTED.

No. 1. Represents a mouth in which the six incisors evidently are intact. The canines were extracted when the patient was a youth, in order to correct an otherwise great inconvenience and deformity. The supernumerary teeth are those, one on either side of the median line. The one on the right side being a geminous tooth ; the supernumerary half of which would naturally follow the central type.

No. 3. This case presents a supernumerary tooth erupted to the right of the median line. This case is a common expression exhibited by supernumerary teeth, and requires no more mention than to say, I believe it to follow the central type.

No. 4. Presents a case, which, with our present knowledge, we presume that the left side of the mouth is normal ; but on the right side of the mouth there exists a space between the

* A Paper read before the Odonto-Chirurgical Society of Scotland.

central incisor and the—as Prof. Turner puts it—pre-canine. This pre-canine evidently is a supernumerary tooth, small, but partaking of both forms of central and canine ; a sort of non-descript, which may or may not be a diminutive type of the, so put forward, missing outer-third incisor. But why—when as in this case there is a certain space left open—the lateral incisor is suppressed and this supernumerary tooth created, is a matter for discussion and investigation beyond my power.

No. 5. Is a somewhat similar case as the preceding one, with this exception, that the open space is between the lateral incisor and the canine on the right side of the mouth. In this case, the lateral incisor has erupted and nature seemed willing to leave space enough for the eruption of the outer-third incisor, but it was not forthcoming.

No. 6. This case is another exhibiting spaces left for the eruption of teeth and the non-fulfilment of the same. This, if the centrals had been close together, would be a very common expression of the suppression of the lateral incisors. It is a question as to whether the spaces left between central incisors may or may not be intended by nature for the eruption of teeth.

In No. 7. is exhibited an arrangement of the teeth, having the left lateral suppressed, and the canine well up to, and touching the central incisor. I should also say that the right lateral incisor is suppressed ; the pre-canine, though not clearly shown in the drawing, in the model it has the decided appearance of being—as in case 4—supernumerary.

No. 8. Is a carved imitation in ivory of a specimen that came into my hands not long ago, having been extracted in order to clear the mouth for an artificial denture, and given me by the patient on account of its peculiarity. It is evidently a geminous lateral incisor. Here seems strong evidence in favour of the outer-third incisor. I have never seen a similar tooth, and I believe it to be a rare and interesting specimen. In the original, a bristle can be passed into each pulp canal.

No. 9. It is but a few days since this case came to my notice, and I include it, as showing that the expression of No. 7 may appear on either side of the median line.

In cases Nos. 1 and 8 I have used the term "geminous tooth," and, I believe, I am right in doing so, though hardly in accordance with Prof. F. Flagg, Phil. Dent. Col., U.S.A., who says that "practically geminous teeth have but one pulp," and the cause of gemination is "abnormality of crown tissue." In case No. 1 it may be so, for we cannot diagnose a tooth in the mouth as possessing one or two pulps; but in case No. 8 although the crowns were joined during the process of creation, the roots are distinct and each one possesses its separate pulp canal. They are not "attached teeth," for "though *they* separate pulps their roots are attached to each other by the intervening walls of their alveoli: bone and cementum not uniting. Neither are they "fused teeth," that phase being brought about by exostosis or mal-position: consequently, I hold to my right of calling them "geminous teeth."

It is perhaps needless to say I have cross-examined each of these patients—who are all educated intelligent people—one of them being the present Home Secretary—to find out if any extractions had been done when young, for, I am sorry to say, there are dentists in this country who, through ignorance, are liable to extract a permanent tooth for a temporary one, but they all affirm that no such extractions have taken place.

I must apologise for the few cases presented, but I have presented them by selection, so as to cover the majority of variations that have come under my notice, which are many and variable; indeed, nature seems to "ring the changes" upon the arrangement of these supernumerary teeth in a prolific manner.

Supernumerary teeth are undoubtedly presented to us by the great law of inheritance, the principal forms of which law may be divided into continuous, interrupted, collateral, and atavic.

The appearance of these supernumerary teeth is, I believe, due to the law of atavism; but upon whose authority we have it that pre-historic man possessed six incisors, I know not, unless it be that of the "Evolutionist." I believe there are

many who do not believe in the theory of evolution, but I will leave that question for more experienced men than I to argue. One observation I will make, though, I suppose that atavic characteristics appearing with comparative frequency, is an effort on the part of nature to bring to our notice forgotten facts—doubtless, for our edification—though for our use, is questionable. As in chemistry, our professors tell us that no matter what changes take place, no particle of matter is lost, so in Nature, to those who can read aright, no information is wanting, though seemingly lost, to instruct us in what existed pre-historically. She is full of signs and warnings, but there is a want of ability on the part of man to read her with sufficient intelligence.

AMALGAMS.*

BY WALTER J. ENGLAND, L.D.S., Eng.

When one or more metals are mixed with mercury, a more or less plastic mass is obtained, the properties of which present a wide field for investigation, and the results are of incalculable importance to us, when we consider the teeth of the present day and the prospects of what they are likely to be in generations to come.

To these alloys, by common consent, the term “amalgams” has been applied, and as their use is a matter of every day occurrence with most practitioners my object to-night will be to give you, at the best, a few crude statements concerning them.

It is now more than half a century since this subject has been under discussion, and a number of preparations have been offered to the profession from the original rough mixtures of copper, silver, and mercury, to the carefully weighed and proportioned alloys of the present day, all claiming, in a more or less degree, to approximate to the ideal of a perfect plug.

The metals which are now used in the formation of amalgams are silver, copper, tin, zinc, gold, antimony, platina, and palladium, and, as you understand the various effects

* Paper read before the Students Society of the Dental Hospital of London, November 9th.

which each of these have when amalgamated with others, so you can form a rough estimate as to the probable value of the filling.

Silver is one of the most important constituents of a good amalgam, as it aids the proper setting by controlling the shrinkage, and also forms the sulphuretted hydrogen, which is more or less continually brought into contact with it within the mouth, a sulphide of silver which not only discolours the fillings, but also the tooth.

This, however, is highly conducive to the permanent saving of the teeth, which are not only badly decayed, but seem likely to continue to decay. Ranking, and quite equalling silver, copper takes a place in a favourite amalgam (Stewart's preparation of Sullivan's) in an enormous proportion.

It diminishes shrinkage, it favours rapidity of setting, and has a marked compatibility with dental tissues—experience seems to show that pulps evince a decided toleration for preparations containing large quantities of this metal, much more so than any other. Unless tin is mixed with it, it turns black, and the dark, hard shining surface, which the dentine presents, when one of these fillings has been removed, is well known to you all.

When tin is added to an amalgam it increases the facility of amalgamation, aids in producing a good colour, prevents discolouration of the tooth, and diminishes conductivity, but it causes shrinkage, though this is counteracted by the action of copper and gold. Gold in small quantities diminishes shrinkage, increases rapidity of setting, and controls the maintenance of colour.

Small quantities of zinc facilitates, in a marked degree, the working of the amalgam, and causes it to keep of a white colour. Platinum may be regarded as having no value in an amalgam, any purpose which it serves being effected in a better manner by tin. Antimony may also be classed as effecting no good, but palladium, when used alone with mercury, makes the most perfect amalgam filling ever known; but, however, it is rather difficult to work.

From this it follows that all the most useful preparations are compounds of some, or all of the following metals, viz :

silver, copper, tin, gold, zinc, and mercury, in varying properties according to the judgment of the maker, and the kind of work for which it is designed, and it is safe to say, that in proportion to the amount of discolouration the greater is the quantity of either silver or copper present; according to the whiteness of the filling so may the presence of larger percentages of tin, zinc, and gold be recognised. This knowledge is valuable when we especially wish to utilise the tooth conserving properties of discolouring amalgams, for situated as we are at present, we may arrive at this conclusion that the more discoloured the filling, the greater the prospects of ultimate success.

The two great disadvantages which those who use these fillings have to contend with are their liability to shrinkage, and when in conspicuous positions their propensity to discolour.

The first, by judicious admixture of metals, has been reduced to a minimum sufficient not to imperil the safety of the plug, as we all know that "G.P.'s" invariably leak, yet preserve the teeth, where in suitable positions better than any other materials. Palladium, Stewart's, used in the manner hereafter described, however, will not leak.

Discolouration, as you may gather from my previous remarks, when in non-conspicuous places is a point to be sought for instead of avoided, but when situated in full view of course this does not apply, and in cases where gold osteo "G.P." is not indicated such preparations as the standard alloy of Eckfeldt, Du Bois, Bonwill, Jamieson and Davis's are useful, as all keep their colour fairly well when nicely finished.

In using an amalgam, as in any other filling, the first consideration is the preparation of the cavity, concerning which you often hear the remark made "that it should be done as well as if for gold." Now this is rather confusing, as if by this it is meant as much care should be taken, I most cordially agree; if on the other hand, they mean the cavity should be prepared on the same principle, I just as strongly dissent. This is evident when you consider the different properties of the trio substances. When preparing for

cohesive gold, you have to bear in mind the fact that every part of the cavity must be accessible to direct pressure, and it is often with reluctance you cut away good tooth tissue in order to effect this ; again in many instances you must have distinct grooves or retaining points in parts of the cavity, tolerably easy of access. Now this does not apply to amalgams, for it can be packed into any undercut with certainty if ordinary care be used, and consequently the cavity does not require that "shaping" which is necessary for gold. The edges, however, should always be straight and not bevelled back so as to make the head of the plug resemble that of a screw, if so they invariably leak, and the amalgam, not possessing the toughness of gold, will break away at the fine extremities leaving ridges or pits for the accumulation of decomposing matter which will cause the failure of the plug.

Another point of extreme importance is that the cavity should be thoroughly dry and to accomplish this, after the exclusion of moisture, I generally wipe out the cavity with a solution of perchloride of mercury in spirits of wine, two grains to the ounce. This serves a double purpose, for not only does the alcohol absorb all moisture, but on evaporation it leaves the perchloride behind in the shape of a fine white powder, and forms a splendid antiseptic. If you are anxious to avoid any risk of tooth discolouration or thermal effects, the cavity can be lined with an osteo, care being taken that none of the lining will be accessible to external influence when the operation is completed.

An amalgam should always first be mixed in a mortar and afterwards rolled into a button by hand. The pestle and mortar should be of glass ground where the amalgam comes in contact. Porcelain mortars are objectionable as they very quickly get dirty in the inside, and are much more difficult to clean than the glass ones. After grinding in the mortar it should be well rubbed in the hand, till it obtains the smooth shining surface well known to all. If this is obtained too quickly, it is a sign of too much mercury being present ; if on the other hand you cannot get this appearance, more mercury must be added. If, when rolling between the finger

or palm of hand, you hear a cracking sound resembling that heard when you bend a bar of tin, it is a sign of a good alloy.

At one time it was generally customary to wash the mass either in spirit, or solution of sulphuric acid 1 in 12, but this is now generally abandoned, as, though to some slight extent it prevents discolouration, it causes the plug to leak. Again some little time ago it was all the fashion, if I may use the expression, to use it as dry as possible, almost powdery, but this did not seem to meet with success, commensurate with the increased trouble in working, if indeed it was not actually detrimental, so now, except when used to wafer, it is generally mixed to a comfortable consistency.

When using palladium previous to mixing, it ought to be prepared in the following manner :—

Divide the powder into two portions, mix one with mercury, but before setting, crumble it up, place it in a crucible and drive off all the mercury. This will take some hours, so a large quantity should be done at once, place it in a bottle and use equal portions from each when amalgamating for filling. Treated in this manner it will not set so quickly, or involve so much heat, and will also amalgamate better.

In packing amalgams, matrices, if necessary, should be employed, as it enables the operator to pack more densely, small pieces should be used and placed into position with a crushing, tapping motion by smooth instruments. At different stages of the filling a pad of cotton wool, amadon, or bibulous paper, should be introduced into the cavity and firmly pressed upon. This squeezes out excess of mercury, which can be wiped away. When the cavity is nearly full, a piece of very dry amalgam is then used, a pad of wool placed over, the whole pressed upon, and the operation completed by gently wiping the surface with a damp piece of cotton wool, or tin foil. For smoothing approximal surfaces nothing equals a neat strip of rubber dam. When drawn across, it follows the curve of the tooth beautifully, and leaves a nice smooth surface, which when set only requires a fine piece of cane or pumice to finish up.

With regard to polishing, those in the back of the mouth

may be stoned or burnished, but when in conspicuous places, after smoothing, &c., they should not be burnished, but, by using a piece of stick with very finely levigated pumice or putty powder, passed over the face of the filling in an up and down direction and not across, it leaves the lines of finish so that the light will strike upon presenting parallel surfaces, and this gives a much whiter appearance than if burnished.

The use of amalgam in entirely broken down teeth I need not dwell upon, but in passing I may mention that if you fit a platina or gold band around them, and fill into the amalgam to the bite, it will make a crown which will compare favourably with either gold vulcanite or porcelain crowns, both as regards time in fixing and durability when placed.

Theoretically the use of gold in a case is objectionable, but practically it is of no consequence and sometimes it is more convenient to use, as it is more easily soldered, which is a matter of some moment when you have a difficult stump to fit.

Another point worth mentioning is, that if a filling wears away it can be renewed easily if the surface of the old filling is brightened, when, if the first layer of the new is packed in pasty, they will unite and form a solid plug.

The disadvantages of good amalgam plugs are sometimes very evident. Leaving aside that of discolouration, where sometimes it is a question of "utility *v.* beauty," we come to the unpleasant effects experienced, generally during mastication, when a tooth, containing a plug of this nature, is clasped by a gold band and comes in contact with a metallic plate. One method of avoiding this is to dull the surface of both filling and clasp, another is to take a small piece of amalgam, and rub that part of the clasp which touches with it. If this is done carefully so that it does not impinge on any other portion of the plate, it will not spread, neither will it enter in the substance of the clasp sufficient to be detrimental; and various other methods known to you, such as changing the filling, making a silver clasp and condensing it, or clasping another tooth. Another cause of effects of a like nature is when the plug comes in contact with either pins, needles, metallic toothpicks, or forks, either steel or silver. This can be obviated by lining the cavity with an insulating

medium, such as osteo, &c. I remember one case where the patient complained of excessive pain in some upper bicuspid filled with amalgam whenever she touched them with a fork, and when I asked her why she touched them in that manner, she answered, as she was a cook, she was continually obliged to do so ; by adopting the method just mentioned, comfort was obtained. Occasionally when amalgams and gold fillings are in the same or contiguous teeth, when connection is made by the tongue or cheek, a shock is felt, varying from simple consciousness to severe pain. In cases where they are in the same tooth, they should be made to join well. I say well, because if they touch only at a single point, it will have no effect, but if a good line of contact is made, the result will be found satisfactory. When they are in contiguous teeth, one must be replaced with a filling similar to the other, or a non-conductor used. Of course if the tooth has lost its vitality none of these effects will be present.

Another objection, which may occasionally come under your notice, is when the patient complains of "continually tasting the amalgam." I can only call to mind one case of this nature coming under my care. There were eight or nine fillings of this nature in the mouth, and most had failed. By removing a large ragged mass of amalgam and replacing with osteo, refilling others with amalgam and carefully brushing and polishing, a very satisfactory result was obtained. Before leaving this subject, I may mention that most of these unpleasant results are of rare occurrence, but as they will occasionally present themselves for treatment, it is as well to know how to treat them successfully.

In conclusion, gentlemen, allow me to state that I have written this paper for the Students Society. By this I mean that as one of the Secretaries I do not believe in writing papers so as to guard yourself from all attack, for meetings of this description ; we are all anxious to learn, by a free interchange of opinions, where if a mistake is made it is not of much consequence as if possible it will be rectified by some present, much to the general advantage of all as nothing insures the remembrance of a fact so well as the recollection of what an error concerning it one once fell into.

PERIOSTEAL CYSTS AND DENTAL ABSCESSSES, THEIR ANALOGIES AND THEIR DISSIMILARITIES.

ABSTRACT OF A LECTURE BY M. TH. DAVID,
Delivered before the Ecole Dentaire of Paris.

After reviewing at length the opinions of Messrs. Guyon and Magitot on the subject, M. David proceeds to give his own views, of which the following is an abstract.

PATHOLOGICAL ANATOMY.—1st. The points to be considered in a periosteal cyst, just as in all other cysts, are the walls and the contents. The wall is formed of cellular elements and gradually increases in size by the hypergenesis of these elements. The internal surface of the sac is lined with one or more layers of epithelial cells, and also presents granulations which bear a close resemblance to villi floating in the contents of the cyst. The outer surface is in contact with the bone, and is adherent to it when the cyst has undergone inflammation, but usually it does not adhere to it : it is owing to this that a cyst at the root of a tooth comes away with it when the tooth is extracted.

The contents of the cyst are serious when it has not been inflamed ; but they become purulent after an attack of periostitis, or if the cyst is opened. The cyst is almost always connected with a diseased tooth (exostosis, absorption, or erosion), the fang of which sinks into the cyst, which might almost be said to be invested around it.

2nd. In the case of an abscess, the exciting cause is almost always an attack of alveolar-dental periostitis, of an acute nature, or which has become acutely inflamed after having remained for some time in a chronic state, the root is hardly at all or but little affected, the chief lesion is in the alveolar wall, which becomes inflamed on its inner surface, next on its outer surface, and finally sloughs away at the point which the pus traverses. Besides which it does not form a sac. The periosteal granulations occasionally found at the end of the fang, do not constitute a sac. There is, therefore, no epithelial lining on its inner surface like in a cyst.

The small sacs which are brought away during an extraction, and are found fixed to the apex of the root, are thus always cysts and nothing more.

M. Malassy has shown quite recently that the periosteum does not take on the form of a membrane, as it is said to do by writers on the subject. The only thing which lies between the tooth and the bone is fibrous tissue, bundles of which go perpendicularly from the one to the other.

A pathological result follows from the direction of these bundles and their cellular interstices, *i.e.*, that the pus is unable to loosen the ligamentous insertions to follow the laws of gravity, and to run along the root and ooze out at the neck. The insertions of the periosteal ligament are sufficiently strong to resist, not only the fusion of the pus, but also the expansion of the cysts, for the latter thrust out and wear away the bone as they develop rather than empty themselves along the root.

ETIOLOGY.—Very little is known about the causation of the cysts, they seldom grow rapidly, and in most instances result from chronic lesions of the pulp and the extremity of the fang, acting slowly and in a continuous way, and in all cases in a but very slightly appreciable manner.

Abscesses on the other hand are due to direct causes about which there can be no doubt. All the lesions which can give rise to alveolo-dental periostitis, such as wounds, acute pulpitis, plugging before the complete dessication of the cavity of penetrating caries, etc., soon give rise to a swelling and an abscess.

COURSE.—From what we have just stated it will be understood that the course of the affection differs in the two cases: slow, subacute, indolent in the case of cysts; on the other hand rapid, more or less acute and very painful in that of an abscess. Cysts may take months or even years to form, while abscesses develop in the course of twelve, twenty-four, or thirty-six hours at the very outside.

Cysts may nevertheless become painful, but that only occurs when they are the seat of inflammation, which may however subside instead of leading to an abscess, and the cyst then reverts to its original condition. These alternate periods of calm and return of pain are often met with.

RESULT.—As both Messrs. Guyon and Magitot have observed, cysts develop by thrusting, in a very gradual way, the osseous walls before them. When they obtain a certain

volume, they always end by opening themselves, and in the following manner :—The cyst becomes inflamed, gives exit to pus and ends like an abscess ; but in many cases the bone in the neighbourhood becomes the seat of inflammation and necrosis in some part of the wall of the cyst, and thus forms an issue for the contents.

Alveolar abscesses, on the contrary the inflammation spreads directly and rapidly from the root to the alveolus, and even to the outside of this. The pus is free and is not contained in a sac. It is owing to this, that instead of thrusting forward the bone, it goes through it, and by following the cellular spaces between the tooth and alveolus, it rapidly makes its exit outside the maxilla.

When an abscess caused by the inflammation of a cyst has opened externally all is not at an end : either the contents of the cyst are evacuated by this means, or an operation has to be undertaken to reach it ; but it is only after the elimination of the wall of the cyst and of the necrosed portion of bone and at the cost of a lengthened suppuration of fistula which will not close spontaneously, and of the extraction or resection of the diseased portion of the fang, that a cure is at last obtained.

On the other hand the general rule is for an alveolar abscess to heal and that in a very short time. When left to itself, it gives rise to a swelling which varies according to the region in which it is, then makes it way through the alveolus on to the gum or cheek. Finally, in the absence of a permanent lesion of the root or alveolus, which is usually what happens except in the case of recurrent abscesses which are met with in old caries, chronic periostitis, alveolar osteitis caused by cysts themselves, a complete cure is obtained in the course of a few days.

Cysts as we have seen are of much more frequent occurrence than abscesses. Each time we find ourselves in presence of chronic or subacute phenomena which have already lasted for some time, and are occasionally accompanied with painful exacerbations without swelling, and are seated on a level with a tooth affected with penetrating caries we may assert almost positively that we have to deal with a cyst.

On the other hand if the phenomena are equally continuous but very acute if they have lasted for several hours, or several days if they are accompanied with a more or less swelling, we must think of an abscess and look after the pus, so as to relieve the sufferings and the disease, and to diminish if not to avoid the dangerous nature of the ulterior bony lesions.

British Journal of Dental Science.

LONDON, DECEMBER 15, 1885.

“THE HOPES AND FEARS OF DENTISTRY.”

There is something almost pathetic in these words, taken as they were to serve as a title for a paper by Oakley Coles, probably the last which he will ever read before a conclave of dentists. Among the members of that brave phalanx, which has won its way against the sneers and scorn of little minds in mighty places, Oakley Coles has been conspicuous as a promoter of the best and most honourable aims of dentistry. But may we not fitly at the close of another year ask ourselves what the author of the paper read at Cambridge asked himself and asked his auditory? At the opening meeting at the Odontological Society of Great Britain, Mr. Rogers brought up the same line of thought. He set himself the task, and gracefully he fulfilled it, of presenting to the Society the portrait of that Nestor of the profession, Mr. Parkinson, and recalled to the members present how, thirty years ago, the Odontological Society was unheard of. The founders were men then in full manhood, and so it is no wonder that their ranks are thinning. Their hopes were the cherished desire of the leaders of the dental profession in those days. They saw only too plainly that dentistry was accepted in many minds, even among those whose education and social surroundings should have taught better, as merely synonymous with “tooth pulling.” It was at least evident that to gain the repute of being a body of scientific workers in a very important branch of surgery, they must by their training be firstly gentlemen and then scientists. They saw that whatever claim they the few could prefer to both these distinctions, that there was a large “tail” which cared as little about the traditions of *ton* and *noblesse oblige* as they did about the more recondite and learned side of dentistry. A tooth was practically an entity to be pulled out or patched up, given a faculty for the selection and carrying out of either of such indications, and their acme of satisfaction was

reached. The origination of the L.D.S. was practically the outcome of these feelings, and the embargo placed upon admission to the Society marked an important rallying point upon the history of scientific dentistry. How far the effects of the earnest work of these men have been felt in the outlying domains of the profession can hardly even yet be appreciated.

One of the chiefest aims and dearest hopes of the well-wishers of the Dentists' Act is that, as a more rigorous code of examinations alike in general and professional subjects has become the order of the day, the general *personnel* of the profession will become raised. The development of any societies and associations which promote these ends must be accredited as organs for the advancement of culture and the general well-being of dentists. It has been a reproach that internecine warfare has taken place amongst us but it appears to us that careful study of the matter will show that considering the heterogeneity of the elements brought together it is marvellous how little conflict has really occurred. Men have hit hard when it seemed to them good, but have been none the less ready to take a return buffet, and when fair play and good humour attend the strife of tongues it is most likely that in the end harmonious conclusions will be arrived at and accepted. In considering the deeds of those who hold the responsible posts in such societies and such associations, one is often too apt to impute a motive or misjudge a criticism. If the world would only remember that there are two sides to every saying, the one which "*I* say and mean," and the other which *you* think you understand, dissensions would be fewer and heart-burnings less frequent. For the future of dentistry then, let us hope that all who really desire accretion and prosperity among dentists will unite, and for the time dismiss mere personal and private ends for the public and general good.

THE DENTAL STUDENTS' ASSOCIATION.—In connection with this Association, we have to offer a few words of explanation. We received a really valuable address, entitled "Presidential Address," but as no name appeared upon the

manuscript, we were obliged to seek an author from outside sources. Now it appears there are two Presidents, an honorary one (Prof. Macleod), and an acting one (Dr. Fergus), and we were unlucky enough to give Prof. Macleod credit for the useful work which had really been done by Dr. Fergus. We are very sorry that the latter gentleman should have thus been slighted—most inadvertently, and we trust that local secretaries will favour us with careful revision of all manuscripts transmitted to us in order to see that the names of the authors are accurately given, and that the Society's name, date of meeting, &c., are also appended. Omission of such precaution leads alike to infinite trouble, and is nearly sure to entail mistakes.

A letter we publish gives pretty fully the object of the Association over which Dr. Fergus presides, and so we have little to add, save to wish a genuine success to this new claimant to honour among dental societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.—The meeting of the above Society took place at the rooms, 40, Leicester Square, on Monday, December 7th, at 8 p.m. Casual communications were given by Messrs. W. St. George Elliott, Felix Weirs and G. Cunningham. Paper was read by F. S. Eve, Esq., F.R.C.S., "Some points in the pathology of cystic and encysted solid tumours of the Jews."

DENTAL BIBLIOGRAPHY.—The S.S. White Dental Manufacturing Co. have certainly conferred an incalculable boon upon the dental profession by bringing out this work. The compiler's name, Mr. Geo. Crowley, will ensure the accuracy of the references, while the repute of the publishers gives earnest of the general character of the work. As it seems little likely that so very expensive a work will ever bring the publishers a pecuniary return, it certainly behoves the profession to lend a hand in lightening the loss of that most enterprising and public spirited-firm, the S.S. White Manufacturing Co. It comprises a List of Books on Dentistry,

published throughout the world from 1536 to 1885. Arranged chronologically. 180 pages. We have in this volume the outcome of a long and laborious effort to present a complete list of distinctive works on dental subjects which have been published throughout the world from the earliest times. It catalogues 2,047 titles, printed in the various languages in which the books appeared, and chronologically arranged. The work is divided into five departments or sections. Section I. contains books published in Germany, Austria, Holland, Norway, Sweden, Denmark, and Switzerland (German); Section II. books published in France, Belgium, and Switzerland (French); Section III. books published in Spain and Italy; Section IV. books published in Great Britain and Ireland; Section V. books published in America. An author's index appended in alphabetical order gives cross-reference to all the volumes catalogued.

REPAIRING RUBBER WORK.—Mr. O. C. Runyan, writing in the "Archives of Dentistry," recommends the following as a useful method. The broken plate is adjusted, and then fastened together with wax on the polished surface. Plaster is then poured upon the gum or palate surface in quite a similar way to when filling an impression. The setting complete, the wax is removed, and you then invest in the flask as if dealing with a new set. The flask is bolted and thoroughly heated so as to soften the rubber. Separate. When the old rubber is all carefully removed, it is replaced, and the joints filled with whatever material is usually employed, then pack and vulcanise.

Abstracts of British & Foreign Journals.

THE ARCHIVES OF DENTISTRY.

PHYSICK'S FORCEPS.

BY JOHN G. HARPER, D.D.S., ST. LOUIS.

It is stated that in some cases the lower wisdom tooth cannot be extracted without first removing the molar in front of it. Any one familiar with the use of Physick's forceps would

not make such a statement. Physick's forceps are made with straight handles. The beaks are wedge-shaped in two directions, having edges at the points and on the inner sides. The beaks are at an angle of seventy degrees to the long axis of the handles, the points of the beaks almost touching.

The manner of application is as follows : Grasp the forceps in the ordinary way, open them and insert the points of the beaks between the second and third molars, one beak on lingual, the other on the buccal side, pressing down well ; close the forceps completely, and rotate inward on the long axis ; this will dislodge the tooth, which can be removed with the fingers or a pair of ordinary forceps. Ordinarily the wisdom teeth incline forward, having crooked roots pointing backwards. These teeth are easily extracted by raising them from the socket and forcing backward at the same time.

SPLIT TEETH.

BY JOHN G. HARPER, D.D.S., ST. LOUIS.

The writer narrates a case of this accident. The patient suffered pain in the superior right bicuspid. The tooth had a small filling on the mesial surface, and a small cavity on the distal. On a close examination a tooth split from mesial to distal surface was found. He drilled into the pulp, devitalised and found that the tooth had two roots, a ligature was kept on the tooth to prevent the two parts from separating. When the tooth being ready for filling he adjusted the rubber dam and placed on the tooth a very strong bicuspid clamp which held the parts very firmly and the cavity was prepared, and a dove-tail made in each cusp ; he filled the roots in the usual manner, let the liquid gutta percha flow into the split at the bottom of the cavity ; he then filled the cavity with gold, being careful not to let it wedge the parts asunder. The case did very well.

ITEMS OF INTEREST.

VULCANIZING.

BY JOHN G. HARPER, D.D.S., ST. LOUIS.

There seems to be less known regarding vulcanizing rubber than any other process used by the dentist. On experiment-

ing, Dr. Harper found the necessity of taking a long time to run up to 320 degrees. A half inch cube of black rubber, run up in fifteen minutes, starting with cold water. Sawed the cube through the middle and found the piece solid. The cube was invested in plaster in the middle of a flask.

He puts but little water in the boiler, so that the rubber would be surrounded by steam. Heated to 320 degrees; after vulcanization, sawed the mass through the middle and found it solid.

Not being satisfied, a larger mass of black rubber was taken, that being most liable to become porous in vulcanizing. A large lower denture was taken and invested in plaster in a flask in such a manner as to be removed whole. The entire space was filled with black rubber, he heated it up in fifteen minutes, let it stand at 320 degrees one hour, and, after sawing from one end to the other through the middle, found the entire mass solid and thoroughly vulcanized. The experiments were made with a Haye's Two Flask Vulcanizer, having a Coolidge Gas Regulator. He found that when the regulator turned down the gas, showing a pressure of about 85 pounds, the thermometer only registered 275 degrees, and rose to only 285 degrees.

INDEPENDENT PRACTITIONER

AMALGAM SOLVENTS.

By DR. W. D. MILLER.

Dr. Miller out of a wide experience finds only one set of amalgams show much tendency to waver away from the surface that in five or six years the teeth require refilling. These fillings all contain copper, and as far as preserving teeth is concerned, they are, so he thinks, vastly superior to any fillings of amalgam. The fillings are absolutely black or *reddish* black, as hard as glass and very brittle. On the grinding surfaces the material disappears very rapidly, so that in a few years often only a trace of amalgam will be found at the bottom of the cavity, but in all cases it clings to the walls of the cavity as though it had been melted and poured in. Dr. Miller fills such cavities, over the amalgam, with

gold. No secondary decay occurs. The two metals do not give rise to disturbances in the pulp. The cause of the washing away of these fillings is unknown ; it would seem that the friction produced by mastication may possibly be one of the factors at work in bringing about this phenomenon. It is, however, certainly not the only cause, though in a somewhat slighter degree.

Dental News.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

ORDINARY MONTHLY MEETING.

November 2nd, 1885.

MR. CHARTERS WHITE, M.R.C.S. AND L.D.S. ENG.,
Vice-President, in the Chair.

The Minutes of the last meeting having been confirmed,

Mr. Arnold Rogers rose and requested permission from the President to say a few words before the regular business of the evening commenced. He would be as brief as possible, since there was always a good deal to be done at the first meeting of the Society after the recess. In a very few days the Society would enter upon its thirtieth year, a term usually regarded as coinciding with a generation of the human race. Of the eighteen founders of the Society, nine—one-half—had passed away ; and considering that some of them were at that time—thirty years ago—men of mature age—he believed he was almost, if not quite, the youngest—it was, he thought, a fair record that so many were still living. Nay, more, some of them were not only alive, but “kicking,” and were still, as of yore, giving their time and energies to the service of the profession in its various developments. Of these workers there was one to whom they were all very deeply indebted, not merely as members of that Society, but in every department of professional work. One who, in his quiet, unobtrusive way, had rendered them priceless services ; who united practical business habits with courtesy and tact, the most generous temper with the most outspoken candour,

a very firm will with the most considerate and thoughtful kindness ; whose genial nature reconciled enemies, and united friends still more closely ; whose character, absolutely truthful and honourable, so completely commanded the confidence of the profession, that he had all its public property entrusted to his guardianship ; who seemed, in a word, to have been specially endowed for the duties which he so ably and kindly discharged.

A few of the Treasurer's oldest friends, who had had the best opportunities of knowing his worth, thought the Society would be pleased to see his portrait in its meeting room. It was, indeed, to be hoped that Mr. Parkinson himself would continue to occupy his present position for many a year. But the time would come when, as he and the other elders of the Society hoped, their successors would reign there, and might perhaps look with some interest on the "counterfeit presentments" of those who, during the latter half of this century, devoted themselves, their time, and their energies to the duty of promoting the highest interests of their profession ; and he felt sure that tradition would hand down some very lovable memories in connection with the name of James Parkinson.

On behalf of those who had joined in this labour of love, he would beg the Society's acceptance of its Treasurer's portrait, and request that it might be given a "local habitation" in the place where he had done so much good work and true.

The President replied that after the eloquent manner in which Mr. Rogers had discharged his duty, it would be unnecessary for him to say more than that he felt convinced that every member of the Society would fully endorse the eulogy which Mr. Rogers had pronounced. He gratefully accepted, on behalf of the Society, the valuable present which was offered to it, and which would be prized by the younger members and their successors as long as the Society existed.

The President then announced that Mr. R. L. Markham, L.D.S.I., of 19, Eldon Square, Newcastle-on-Tyne, had been

duly nominated as a candidate for membership, and would be balloted for at a subsequent meeting.

Mr. Weiss reported that several valuable works had been received for the Library either as donations or exchanges, viz. :—

There had also been added to the Library by purchase fourteen additional German works, some of which were rare, and all of more or less interest. He was glad to be able to state that the German portion of the Library was now more complete than he had at one time expected to get it.

The Curator said that the only addition to the Museum which he had to show was a model which had been sent by Mr. Charters White, and as the donor was present perhaps he would not mind describing it.

Mr. Charters White said the model represented the upper jaw of a young man, aged twenty-four, and showed a supernumerary central and a supernumerary canine. Besides the overcrowding, it would be seen that the mouth was in a very neglected condition, but the patient would not allow anything to be done.

Mr. Storer Bennett read the following communications from Mr. C. W. Dunn, of Florence :—

(I) "A girl about thirteen years of age presented herself at the Dispensary for the Treatment of Teeth, and requested that the right lower central incisor should be extracted.

"All the permanent teeth, with the exception of the wisdom teeth, were present and in good condition; the tooth to which she pointed seemed discoloured, malplaced, very much out of the proper line, and was exceedingly loose, hanging, as the saying is, by a thread. At the first moment I thought that it was the deciduous tooth which had remained beyond its proper time; but on touching it with a pointed excavating instrument it fell out, and great was my surprise to find that it was a permanent tooth, that it was bent at a considerable angle, and that in this angle there was a miniature tooth, attached by its extremity to the periodontal membrane of the bent tooth. I observed no abnormal appearance of the parts around; the gum seemed full, round, and it

appeared to me as if the tooth had loosened from periostitis. Evidently, at some previous period, the tooth had been fractured transversely about the margin of the gum, and the two parts had re-united.

“The girl had left the Dispensary before I had remarked any of these peculiarities about the tooth, and therefore I could ask her no particulars with regard to when the injury had occurred, how much time had passed between the injury and the extraction of the tooth. I imagine from the appearance of the tooth itself, and from that of the parts around it, that some years must have elapsed.

“I have thought that it might interest some members to examine the section of the fractured tooth, and that of the small one, which might be called a parasitical tooth.

“I would ask what explanation can be given as to the formation of this smaller one? How it was produced, and by what?

“It will be seen that, although so small, it is perfect in all its parts, possessing its cementum, dentine, pulp cavity, and enamel (if I am not mistaken), and also that its enamel has a fracture in it. I would ask also those who are more competent than I, and who have more familiarity with the microscope, how and with what substance the fractured parts of the larger tooth have been united? Is it real dentine, is it cementum, or is it a production of the peridental membrane not possessing the exact character of either one or the other of those parts?

(II) “At the Dispensary for the Treatment of the Teeth of the Poor, in this city, in the past year, a woman brought a little child, whose lip was lacerated and swollen, the gum inflamed, and the right upper deciduous incisor missing. The history of the case was that the day before, the child, a little girl of three-and-a-half years, while playing in the house had fallen over a pail, and on being raised it was found after the bleeding had ceased, that the right upper incisor was no longer there, and on search being made for it, it was found entire, uninjured; at the extremity of its root was a large opening through which the pulp had passed, but there were no remains of the pulp in the tooth.

"The mother called attention to a substance hanging down between the remaining central and lateral incisors. It was shorter than the teeth, appeared to be a prolongation of the gum, was highly sensitive to the touch, and had the form of the missing tooth, being square at its lowest and free end. From its large size I thought at first that it was a part of the gum, which, having been lacerated, was hanging loosely down; but finding it so sensitive, and it having so completely the form of a tooth, I suspected that it might be the pulp which had remained, and that the bony outer casing of the tooth had just simply been slipped from it, as if it had been a skin or rind which had been forcibly dragged off.

"I called the attention of the students to it, and with their help drew it down as far as I could, cut it off as near to the gum as possible, and cauterised the exposed surface with a minute quantity of strong nitric acid.

"I took the excised portion to Professor Brigidi, and begged him to examine it, and ascertain whether it was the pulp or gum. He has made several preparations of it, which I forward for inspection, and would request that an opinion should be given.

"Professor Brigidi believes that it was the pulp, but not having experience in this particular branch of study, would be glad that others should determine the question."

Mr. S. J. Hutchinson related the following interesting case of reflex nervous disturbance caused by dental irritation:—

In the course of the discussion on Mr. Power's paper on "The Relations between Dental Lesions and Diseases of the Eye," read before the Society two years ago, he had mentioned the case of a lady* who had been sent to him by Dr. Gowers with a request that he would examine her teeth, and see if he could discover any probable cause for a spasm of the left eyelid from which she had suffered for some time. The patient's left eyelid was drawn up by a constant spasmodic contraction of the levator palpebræ in such a manner that not only the whole of the iris, but also a considerable

amount of the white around it, was always visible. On examining the patient's mouth Mr. Hutchinson found her teeth in a very bad state. Both wisdom teeth on the left side were carious; the upper second molar on the same side was decayed, with an exposed pulp, and the lower second molar was in the same condition. Mr. Hutchinson extracted these four teeth, but though the patient no longer suffered from neuralgia as she had before, the spasm of the eyelid was not in the least diminished. There did not appear to be anything amiss with the other teeth; the left upper first molar contained a large Sullivan's stopping, but it had never given the patient any inconvenience, and she refused to allow it to be interfered with. Soon afterwards the patient returned to her home in the country, and Mr. Hutchinson saw nothing of her for more than a year. When she again presented herself the eye was in the same condition, and Mr. Hutchinson again failed to find anything in the mouth likely to be a source of irritation except the amalgam stopping in the left upper second molar. After some persuasion the patient allowed Mr. Hutchinson to remove this, and he then found at one spot a minute exposure of the pulp on which the filling had evidently pressed. Mr. Hutchinson thought it best to advise the removal of the tooth, and the result was most satisfactory. The patient's appearance at once began to improve, and at the end of six months, although on close examination a difference could still be discovered, it was so slight that it would not be noticed by a casual observer. It was evident, therefore, that in this case reflex irritation of the third nerve had been caused by irritation of a branch of the fifth, and this in the absence of any symptoms referable to the tooth.

The President remarked that such cases were often very misleading, and always difficult to deal with. He congratulated Mr. Hutchinson on his success.

Mr. Hepburn showed, for Mr. Arthur Underwood, a temporary upper molar with a large sequestrum attached which had been removed at the Dental Hospital from the mouth of a boy between five and six years of age; it was ascertained that he had suffered from measles about six months previously. Mr. Underwood had met with a precisely similar

case in the course of his practice at the West London Hospital, and he wished to know whether other members had met with the same experience, and whether necrosis of the alveolus was a commoner sequel of measles than it had generally been supposed to be.

Mr. Storer Bennett showed a small gold medallion which had been produced by the Rotation Method and which had been sent to him by Dr. Herbst. It demonstrated very clearly the exceedingly accurate adaptation of the gold to the walls of a filling which was obtained by the centrifugal action of the rotating burnisher. A die or seal had apparently been used, and every line on it, down to the finest markings, were distinctly reproduced on the gold. It only occupied five minutes in doing.

He also exhibited the instruments now used by Dr. Herbst in filling by the rotation method. In order to avoid the loss of time caused by the frequent changing of the engine attachments, Dr. Herbst now used smooth, round hand-burnishers for the first packing of the gold, afterwards condensing it thoroughly by means of the rapidly revolving "roof-formed" instrument attached to the engine.

Mr. Bennett next handed round some shields invented by Dr. Herbst for the purpose of protecting the cheek and tongue when using sand-paper disks. Also some bloodstone points, of German manufacture, which he (Mr. Bennett) had found to answer better than any other material he had yet used. They were, however, only available for largish cavities.

When filling interstitial cavities in front teeth Dr. Herbst passed a thin piece of steel between the teeth, and bent the free end towards the opposite cheek. Thus if a mesial cavity existed in a right upper lateral incisor, the steel would be passed between this tooth and the central, its free end being bent towards the left cheek, where it would be retained by the left hand. Similarly, should the cavity exist in the distal side of the same tooth, the steel being introduced between the lateral and canine, its free end would be pressed over towards the right cheek. An inclined plane would thus be formed leading directly to the cavity, into which the gold

could be introduced from the front of the teeth with great facility. Mr. Bennett added that he had tried to describe this at the meeting of the Association at Cambridge, but he feared it had not been correctly understood. He therefore demonstrated it again.

The President thanked Mr. Bennett for his explanation, and said the filling shown was really a remarkable specimen, and one which testified most thoroughly to the capabilities of this process in the filling of any cavity, however irregular in shape.

He then called upon Mr. Balkwill for his paper. [See p. 1113.]

DISCUSSION UPON MR. BALKWILL'S PAPER UPON "A METHOD OF MOUNTING PORCELAIN CROWNS ON PULPLESS MOLAR ROOTS."

The President remarked that the paper was both interesting and practical, and he had no doubt that many of those present would have something to say on the subject of artificial crowns. He thought, however, that the majority of practitioners would scarcely agree with Mr. Balkwill in considering his method easy of execution. It appeared to him (the President) to be one which called for a considerable amount of care and neatness of manipulation.

Mr. Walter Coffin said the great difficulty with hollow porcelain crowns, especially when setting them with a material of the peculiar nature of amalgam, consisted in getting just the right amount of plastic material—neither excess nor deficiency; and he thought that when the crowns were intended to be fitted with any accuracy to the root, and no provision was made for the escape of surplus matter, this difficulty was almost insurmountable. He had mounted with some success, as no doubt others had done, many forms of porcelain teeth on molar and bicuspid roots, and more especially a pattern of molar with an undercut groove on the under side, originally designed in America for shallow bites in cast metal base or vulcanite work. As, however, this tooth had the defect of frequently splitting across where weakened by the groove, his father had, many years ago, made a modification in which one or two platinum pins, transversely placed, bridged the groove, and made a strong and tenacious crowning or plastic plate tooth. Placed with the groove post-anteriorly, the two open ends treated and finished as approximal fillings, a very slightly firm crown resulted.

Dr. St. George Elliott said he should have been glad if Mr. Balkwill had illustrated his description by means of a diagram. During his recent visit to America he had seen some crowns, exhibited by the S.S. White Company, which closely resembled those shown by Mr. Balkwill. Personally he had had so much trouble with porcelain crowns for molars that he had almost entirely abandoned their use. He found that a better plan was to fit a gold or platinum band round the top of the stump, and fill this with amalgam; the result was, no doubt, somewhat unsightly, but it was useful.

Mr. J. S. Turner remarked that the great desideratum in fitting crowns was *space*. Given a sufficiency of space there was no difficulty, but without it it was impossible to use a crown of sufficient strength, and he knew of no method which could be employed successfully except that mentioned by Dr. Elliott. He had found one of Ash's ordinary vulcanite teeth answer the purpose admirably in some cases.

The President said the method appeared in Mr. Balkwill's hand to give very satisfactory results, but it seemed to him that it required very accurate judgment. Was there sufficient thickness of crown to allow of grinding and to adjust the articulation?

Mr. Balkwill replied that there was really no difficulty in placing the crown in position. The pin projected a good bit beyond the hollow part of the crown; this was surrounded by rather dry amalgam, whilst the hollow part was filled with soft plastic amalgam, and when the crown was pressed into position the latter was forced out. He claimed that his crown could be fitted in cases where no other with which he was acquainted would serve. He would ask Mr. Turner to examine the models of Case 2; no tooth made by Messrs. Ash would be of the slightest use in that case. With regard to articulating, the crown could easily be let down by grinding the margin; it was not necessary to grind the top much.

The President then called upon Mr. Hern to read his paper on "A Method of Treatment of Dead Teeth."

MIDLAND ODONTOLOGICAL SOCIETY, BIRMINGHAM.

The ordinary meeting of the members of the above society was held at the Medical Institute on Thursday, November 5th, 1885.

Mr. S. Francis Clarke, L.D.S., presided. The hon. secretary having read the circular convening the meeting the minutes of the previous meeting were read and confirmed.

The chairman then called upon Dr. J. S. Crapper for his paper on the "Treatment of a case of Irregularities."

At the termination of the reading of the paper a discussion arose, and satisfaction was expressed at the mode of treatment adopted and the satisfactory results achieved, and as the patient was present, opportunity was afforded for a thorough examination of the mouth.—A hearty vote of thanks was accorded to Dr. Crapper for his interesting paper.

Correspondence.

We do not hold ourselves responsible for the opinion of our Correspondents.

DENTAL REGISTRATION AND THE "DENTISTS' ACT."

To the Editor of the British Journal of Dental Science.

Sir,—I beg to draw your attention to the fact that there are many good capable dentists debarred from the exercise of their profession through the refusal of the Medical Council to place their names on the Register. Why? Not because their title to the word dentist is denied, but rather owing to the faulty construction and misleading orthography in the Act, they neglected to register before a certain date.

Now the gist of the whole matter is this. The spirit of the Dentists' Act goes to show that vested interests are to be protected, and by not impartially adjudicating according to their spirit and intention, the Medical Council are contravening their Act.

In the *Medical Directory* "By Authority," it is stated, "persons entitled to be registered are licentiates in dental surgery, foreign and colonial dentists, and persons who before July, 1878, were *bona fide* in practice as dentists;" further, a Clause in the Dentists' Act states:—"Persons who apply for registration up to Dec., 1878, shall pay a fee of two pounds, after that date five pounds."

In this Clause there is not a syllable of Aug. 31, 1879, being the last day for registration. Some dentists were ill, others were misled and befooled, and the upshot of the matter is, many capable men are left out in the cold and cannot pursue the business of their life legally.

There is an Association of Dentists originated ostensibly for the protection of the interests of their confreres. Why don't they take up these cases, and see these men righted. It appears to me that instead of helping they are trying to

injure their poorer brethren as much as they can. Recently they attempted the prosecution of a man who had the temerity to call himself a dentist. The case was duly tried; current Register opened in Court; defendant's name not there. When defendant's solicitor evokes the aid of the Register for 1879, it is found that the defendant's name was duly registered. Case for defendant, magistrate upholding vested interests. Registrar Medical Council retreated from Court.

Now I and others, sir, are forming an Association that will work in the interests of those unable to help themselves in a matter such as that above detailed. I invite subscriptions for the General Dental Defence Association. Before the end of next week printed statements of these facts will be in the hands of every member of the House of Commons. Gentlemen who have been refused registration or intimidated, will do well to communicate with the Secretary of the Association, 98, Queen Street, Exeter.

I am, Sir, Your obedient servant,

A. D. ABBOTT.

P.S.—I may add that our Solicitor characterises the wording of the Act as “misleading and contradictory”—*sic*.

DENTAL STUDENTS' ASSOCIATION.

Sir,—As Secretary of the newly-formed “Dental Students' Association,” I wish to explain the formation of the above Society. As many of your readers will have heard of a Society which has existed for many years under the same name, they will wonder what is the use of a similar Society in the same town. Would you therefore allow me to explain that the other Society has given up its name and is now being carried, or is about to be carried on under the name of the “Glasgow and West of Scotland Dentists' Association,” and that the students of this Dental Hospital have now formed the present Society to take its place. The list of office-bearers are:—

Hon. Presidents—Prof. GEORGE H. MACLEOD, M.D.

„ J. R. BROWNLIE, ESQ., L.D.S.

President—O. FERGUS, ESQ., L.D.S., D.D.S.

Vice-President—Mr. W. H. WOODBURN.

Hon. Sec.—Mr. JOHN BIGGS, JUNR.

Hon. Treasurer—ALEX. SMYTH.

Custodian—Mr. A. P. SINCLAIR.

I am, Sir, Your obedient servant,

JOHN BIGGS, JUNR.

St. George's Road, Glasgow

Hon. Sec.

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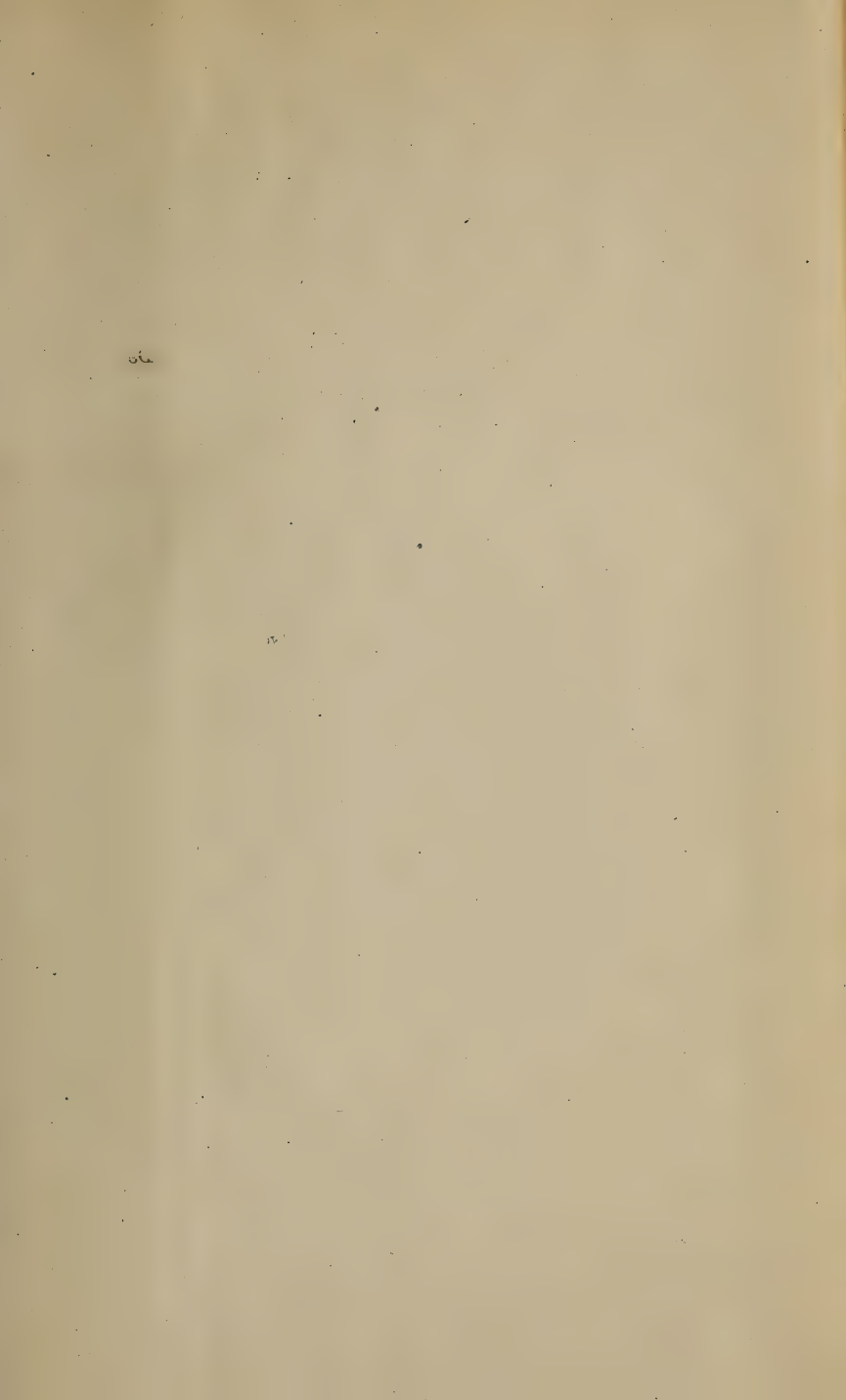
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